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MEEHANS' MONTHLY.

A Magazine of Horticulture, Botany
and kindred subjects.

CONDUCTED BY

THOMAS MEEHAN,

FORMERLY EDITOR OF THE "GARDENERS' MONTHLY," AND AUTHOR OF THE "NATIVE FLOWERS AND FERNS OF THE UNITED STATES." VICE-PRESIDENT OF THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA, BOTANIST TO THE PENNSYLVANIA STATE BOARD OF AGRICULTURE, ETC.

ASSISTED BY

THOMAS B. MEEHAN, J. FRANKLIN MEEHAN, S. MENDELSON MEEHAN.

VOLUME XI,
1901.

ILLUSTRATED WITH COLORED LITHOGRAPHS,

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ASTER TANACETIFOLIUS

ASTER TANACETIFOLIUS.

DAGGER ASTER.

NATURAL ORDER, COMPOSITÆ.

ASTER TANACETIFOLIUS, Humboldt. Bonpland, and Kunth.—Pubescent or viscid, very leafy, a foot or two high; lowest leaves two to three-pinnately parted; uppermost simply pinnatifid or entire; heads half-inch high; bracts of the involucre narrowly linear, with slender, mostly linear-subulate, spreading, foliaceous tips, or the outermost wholly foliaceous; rays numerous, half inch long or more, bright violet; akenes rather broad, villous. Coulter's *Manual of Rocky Mountain Flora*. See also Gray's *Synoptical Flora of North America*, and Britton and Brown's *Illustrated Flora of the Northern United States, Canada and the British Possessions*, as *Machæranthera tanacetifolia*.

The species of plant now illustrated has a wide geographical range, being found in various places from Northern Colorado and Nebraska to Mexico, from the latter of which localities it was first made known to us, under the name of *Aster tanacetifolius*, by Kunth, in the great work *Nova Plantarum Genera et Species*, of Humboldt, Bonpland and Kunth, published in seven quarto volumes, in Paris, between the years 1815 and 1825. As it is found in many species having so wide a distribution, there are geographical forms in separate localities, often so distinct as to be suggestive of specific rank. In describing the species, therefore, it is profitable to note where the specimens employed in illustration were gathered, and the descriptions made accordingly. In this case the originals of the drawing first made the acquaintance of the author on the plains of Eastern Colorado, on the borders of Nebraska, and the description adopted is from Coulter's "Flora" of that portion of our territory and which matches so well the pretty picture here presented. Though many years ago since, the incidents of the few days on which this Aster was connected are still vividly memorable. After some weeks of wagoning through the mountains, "Camp Meehan," at the base of Pike's Peak, was started somewhat late at night. Our first surprise, in the morning, was to find our soft bed consisted of poison vines, and our bed-fellows horned toads (*Phrysonoma cornuta*), – both, however, wholly innocent of any injurious consequences to us. In the distance seemed to us a cemetery studded with huge and curious monuments, but which proved to be the odd phenomena now so widely known as the Garden of the Gods. A tract, once sand from the mountain washings, turned to stone by volcanic heat, had been washed out by subsequent mountain torrents, leaving here and there portions standing of many fantastic shapes,—sometimes as grave-yard monuments, at others as ruins of old abbeys or castles. Sometimes these seemed so natural in the resemblances as to remind one of Old World experiences. One set has been named for the Abbey of Kenilworth.

> "The reverend pile, by wild and waste
> Profaned, dishonored, and defaced,
> Through storied lattices no more
> The softest light the sunbeams pour,
> Gilding the Gothic Sculpture rich
> Of shrine and monument, and niche.
> The Civil fury of the time
> Made sport of sacrilegious crime."

Sir Walter Scott could as well have drawn the picture from a scene like this, as from the real ruins he had before his mind. Along the base of these huge mountains, over driven sand that had thus been novated and renovated several times through the ages, the floral inhabitants would naturally be emigrants and thoroughly individualized and mixed. And this was what we found during our three days' tramp to Denver. In very few cases would a large number of individuals of one species be found in fraternal relations with each other, but they would be as variously mixed together as in the nosegay of a florist. The first plant found, of our Aster, had, for a close companion, the pretty, yellow-flowered Evening Primrose (though day-flowering), *Œnothera serrulata*, *Yucca angustifolia*, and the prickly *Opuntia*.

COLOR PLATE

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COLOR PLATE
INTENTIONAL SECOND EXPOSURE

But the pretty, light blue of the Aster, with its ferny foliage, gave the chief memorial stamp to the events of the day. Later, on the journey towards Nebraska, it was found in some abundance along the line of the Platte River.

In its general appearance it would not be taken for an Aster, especially in connection with the fact that it is an annual and dies after flowering. It is one of those cases in which nature seems to teach man in botany what he fails to observe for himself. In the case of many genera near to *Aster*, botanists can scarcely note divisional distinctions, but have to go by their general appearance. This is notably the case with the golden-rod, *Solidago;* it is very difficult to describe the distinction between it and an *Aster*, and yet the indifferent observer seldom mistakes a golden-rod for an *Aster*.

When our plant first came under the observation of the describer, it was as a plant cultivated for ornament in a Mexican garden. It reminded him of a tansy, bearing the flowers of an Aster, and though he describes it as *Aster tanacetifolius*, from the tansy-like appearance, he remarks that it should properly stand as a representative of a new genus. This was in 1820. In 1824, Willdenow refers to it as *Aster chrysanthemoides*, — and it might be noted as a matter of propriety that the foliage certainly is more suggestive of the Golden Chrysanthemum of the ancient Greeks, *C. coronarium*, than it is of the tansy. Thus it continued till Christian Gottfried Nees, Professor of Natural History at Bonn, and who was recognized as an expert in the knowledge of the Aster family and of compositæ in general, took the hint from nature and founded the new genus *Machæranthera*. In this he not only took the natural appearance into consideration, but that the form of the anthers differed. They were shaped like the short heavy sword known to Spanish-Cubans as a Machete, which is again a derivative of the classical *Machaira*, and thus Nees gave us in this plant *Machæranthera*. This was subsequently generally adopted by botanists; but scarcely had the herbarium labels been changed, before the same experts sent us back to *Aster*. At the present time, Britton and Brown, and other eminent botanists, have again returned to *Machæranthera*, and, though the author's views coincide with this, it has been described under the name that seems most prevalent at the present time.

So recently, however, as 1852, appears a figure and description under the name of *Machæranthera tanacetifolia* in the *Botanical Magazine*, and, for all the geographical differences already noted, is so much like the one we have employed for our illustration that they might have been taken from the same plant. This was from seed gathered in New Mexico by Charles Wright, and which flowered at Kew. In our herbarium, Nuttall has a specimen from "the Plains of the Platte," which he has ticketed, "*Dicteria coronopifolia*," a fac-simile also of our plant. But other specimens differ so much that even Nuttall was deceived into ticketing one as a *Chrysopsis*, "*C. coronopifolia*, from Wyeth's expedition, on the sources of the Missouri." This has remarkably small flowers, and very slender pedicels. Specimens from St. Luis Valley, Colorado, gathered on the Wheeler expedition, are very dwarf, and the flowers corymbosely paniculate. Utah specimens, collected by Ward on the Powell expedition, have remarkably long, slender flower stems. Pringle, from Mexico, has specimens stout and straight, some three feet high with leaves heavy like our common *Ambrosia* or ragweed, —while Montana specimens, by Dall, are of very low and compact growth.

Hemsley, in his biology of Central America, finds it widely diffused. He names California, Texas, North Mexico, Saledo, Chihuahua, and Antonio de las Alanzanes, as districts in which it abounds. In our country Dr. Gray, in his "Synoptical Flora," locates it on "moist ground, Nebraska to Texas, Arizona, and borders of California."

In our enlarged drawing, Fig. 2, the great difference between the ray-floret and the disk-floret is well contrasted. When the akenes are referred to in botanical descriptions, those of the ray are meant. Though the disk-florets appear hermaphrodite, certainly having apparently a strong pistil, it is believed perfect seeds are furnished by the female ray florets only. The lobes of the style, as taken by our artist, appear twisted, unlike cases generally where the disk florets are fertile.

EXPLANATION OF THE PLATE.—1. Specimens of flowering branches from Western Nebraska. 2. Florets enlarged.

WILD FLOWERS AND NATURE.

THE MOUNTAINS OF SCOTLAND.

"Yet, Caledonia, beloved are thy mountains,
'Round their white summits though elements war;
Though cataracts form 'stead of smooth-flowing fountains,
I sigh for the valley of dark Lochnagar."

BYRON.

MISTLETOE AND OTHER PARASITES.—Mrs. Loudon's "Gardening for Ladies" states that the Mistletoe sends roots into the cambium. *Monotropa* has these roots. Are not all haustoria more or less modified roots? C. W. G.

GRAY AND THE ASTERS.—Your paragraph on the widely divergent forms of *Aster concolor* recalls the vexation which the entire group gave to Asa Gray, who, after making them almost a life study, still found many puzzling individuals. His experience may prove an incentive to young botanists to perseverance.

We find among his letters one, written to Engelmann, April 17th, 1880, in which he says:—"I am half dead with *Aster*. I got on very fairly until I got into the thick of the genus, among what I called *dumosi* and *salicifolia*. Here I work and work, but make no headway at all. I can't tell what are species, and how to define any of them, nor what the nomenclature is, *i.e.*, what are original names."

A few days later he wrote to Redfield:—"If you hear of my breaking down utterly, and being sent to an asylum, you may lay it to *Aster*, which is a slow and fatal poison. Apparently, it will take a year or more for me to finish it, with the greater chance that it finishes me before that time."

A year later, after studying them at Kew and the best European herbariums, he again addresses Engelmann thus:—"I am deeply mortified to tell you that, with some little exception, all my botanical work for autumn and winter has been given to *Aster* (after five or six months at home), and they are not done yet! Never was there so rascally a genus! I know at length what the types of the old species are. But how to settle limits of species, I think I never shall know. There are no characters to go by in the group of vulgar *Asters;* the other groups go very well. . . . The specimens you have collected for me last summer, when I get them, may help me; or may reduce me to blank despair!"

BESSIE L. PUTNAM.

[Sometimes it is a misfortune to be a great man. A friend of ours, an eminent lawyer, expostulated with some painters employed by a contractor to work on his house. They could have finished the job in ten or twenty minutes; but were there, ready for work, the next morning. "Why not have finished yesterday?" he asked. "We only work eight hours," was the reply. "I suppose if you had paint on the brush enough to finish, and the clock struck the eighth hour, you would quit?" "Yes, sir; we should quit." "Eight hours," he commented, "why I work ten, fifteen hours, and often into the late hours of the night!" The chief spokesman replied, proudly, "There, Mr. K., was the mistake of your life. You should have learned the painting business."

It is something this way with our great botanists. They should have been nurserymen, or florists, engaged in raising seedlings on a large scale. They learn how great is the variation among individuals of a species,—and they would easily group a number of forms under one species, that botanists now worry over in order to bring them within narrow, specific limits. With experience of this kind, a possible half of the so-called species of *Aster*, as they stand to-day, could be abolished; and instead of *Aster Jonesii*, or *Aster Smithii*, the florist would send them out to his customers as *Aster Morning Glory*, or *Aster Evening Star*.]

FAIRY RINGS.—A Chicago correspondent notes rings formed in the grass on his lawn that seem somewhat different from those usually described as Fairy Rings in the books. But

these vary somewhat in character, according to the kind of agaric, or to the conditions. In a general way they are formed in the following manner:

When the spore of a mushroom starts to grow, the mycelium or spawn pushes out threads precisely as the spokes run out from the hub of a wheel. At the end of each thread the flower—that is to say, the "mushroom"—appears.

Many species of the mushroom family are root parasites. They love—that is, the spawn loves—to be attached to the roots of grasses. Sometimes some species kill the grass outright, at other times the grass suffers only so much as to take on a brownish tint of green. The mushrooms at the end of the "spokes of the wheel" are highly charged with nitrogen when they decay. This is a good manure. The grass at the rim of the circle gets an advantage, and frequently this border of grass is more vigorous and of a deeper color than the rest.

When spores are numerous, one circle will frequently encroach on another, just as ripples, from stones thrown in a pond of water, will do.

The common mushroom does not destroy grass, but the change of tint in the green of the grass can be easily noted at the circumference of the circle.

The phenomena refer wholly to growth from spores. Growth from spawn proceeds irregularly in any direction; so that in a few years one circle so invades another, all traces of circular outlines disappear.

VITALITY OF SEEDS.—Mr. H. Witte, an intelligent horticulturist of Leyden, noting the discussions on the supposed vitality of seeds, when caught under conditions unfavorable to germination, reports that, in 1807, a ship with a cargo of gunpowder exploded, causing the destruction of a whole square of buildings, with the loss of some 150 lives, in the city of Leyden. Known as the Ruined Plain, this square has since been covered with gravel, and used as a military drilling ground. A few years ago, a new building was erected on the spot, and the earth from the deeply-dug cellar dumped in heaps around. Many kinds of plants, usually found in gardens, grew at once from these heaps of earth. The usual explanation, in these cases, is that the seeds are blown there by winds, by birds, or some other agency. These speculations were fully tested here, and found to be utterly untenable. After the most careful examination, it was decided that there could be no way by which these plants could originate but from seeds that had been lying in the buried-up gardens of half a century before.

Jersey City, N. J. P. OUWERKERK.

[The writer can only add, to what Mr. Ouwerkerk has said, that for many years it did not seem that the evidence, on which the indefinite longevity of seeds is accepted, was by any means invulnerable. But observations, similar to those quoted by our correspondent, seem to put the fact beyond all question.]

THE ENGLISH SPARROW.—Mrs. Seliger says, in *Hartford Times:* "We say the 'English sparrow,' meaning the depraved little street bird of our cities, but in fact he is of Teutonic origin and went across the Channel with the Anglo-Saxons of the same race. His destiny was to cross also the Atlantic, not to leave one part of the three nations which naturally belong together, without his chirruping presence. A grain eater, if he can get it, daring to fly between the meshes of the wire netting of the chicken-coop to steal it, he is so cunning that no ordinary device of a trap will catch him. And even if caught, we have sympathy with that little puckering heart in our hands, and had rather let him fly again than kill him. Yet it is on the increase constantly, having now, since January, the third brood under way. We have yet to find the means to subdue them, not by destroying their nests, but by encouraging them to build where we can at all times easily reach them and to be able to destroy their eggs. In the vine districts of the Rhine, in Germany, sparrow towers, long, narrow boxes, are put up on poles, provided with small compartments for nests. In these he is enticed by hanging out a few straws and feathers, and once settled down to housekeeping, he is kept under surveillance, and cannot do so much harm as otherwise he would if left undisturbed."

[The English Sparrow was first introduced into America by John W. Bardsley, a painter, of Germantown, who was paid $100 by the city of Philadelphia to bring some over, on the return from a visit to England, his native land. It was supposed they would clear the city trees

of the measuring-worm, which they have effectively done,—and, indeed, have ridden the city of many insects destructive to street trees. Even the Elm-leaf Beetle, which has a habit of falling to the ground for safety when disturbed, is so far in check that elms are already being again planted freely. It does not attack the hairy caterpillar that is given us by the Cotton Moth,—but it works on the moth to a considerable extent, though this being a night-flying insect, the sparrow has not a fair chance at it. It is a scavenger, and helps considerably in clearing the streets of noxious matter. The sparrow is a good friend in a city; a mixture of good and evil in the suburbs; and a terrible aggravation to the farmer when his grain crops are ripe.]

WATER-WORN ROCKS.—It has been repeated to me, many times since childhood, that the continual dropping of water wears away the rock, and I, in time, began to believe it; but since I have been moving around and climbing over these rocky hills, I have concluded that it is a fallacy, that there is not a particle of truth in it. The most of the rock in this section is a sand-stone, two hundred or more feet in thickness. It is one solid rock for miles and thousands of miles. This whole country, and probably the whole of Central and Southeast Missouri, is underlaid with this mass of rock, all in one solid chunk. Across the Mississippi River, the east bank, after passing the American bottom, is composed of this same rock. Water cannot of its own action wear away rock. It may fall for centuries,—yes, thousands of centuries,—and it will not make any impression on the solid rock. But when it has as an agent sand or other rocks, it wears it away fast. Sand, continually grinding by the force of water against the rock, wears it away. In the rainy weather, gullies, small holes, are often met with in the face of the rock, circular in outline, like pockets, generally filled partly with sand and small pieces of rock. These are the tools used by the water which whirls them around against its sides, constantly and slowly enlarging them by attrition. In my walks on the creeks and river shores, I see the rocks partly submerged, covered with algæ,—slimy, soft. The water passes smoothly by them, the sand and pebbles strike, but make no impression. But when the rock is bare, then the sand and pebbles cut into it, scratch it as they pass. Ice is the greatest agent of all in the wearing away of rocks. F. K. STEELE.

Festus, Mo.

[That the continual dropping of water on the same spot may, in time, wear a hole in the rock, may be sound in principle, for all the illustrations of our wide-awake correspondent. In the cases cited it is not the water alone that wears the rock away. But a drop continually in the same spot, especially if it fall from a height, must surely have force, though but the force of a Liliputian, against which even a Brobdignagian must eventually give way.]

FOOD OF MICRO-ORGANISMS.—It has long been known to mushroom growers that the fine spores of the mushroom will only germinate on damp glass under very nice conditions of heat and moisture. Another remarkable fact is, that though these spores may sprout under the combined conditions, so as to show the form and character of the little plant,—the little cell,—they soon die if the water used is very clear. In fact, it has come to be an axiom applied to all these lower orders, including bacterial organisms, that without the special food they require, the most injurious in a general way is harmless in fact. The spores of the blue mould that we find in bread are omnipresent. We are taking them into our system with every breath. They fall on our fruits and vegetables, and are always about us. But they sprout and die, unless the bread, or bruised fruit, or whatever nice dish their delicate palates may desire, be at hand. Then they develop rapidly, and cover the article with the little plant we know as blue mould.

DESTRUCTION OF BIRDS.—Mrs. Seliger says: "In passing up our main street, yesterday, I was horrified to see the exhibition of new millinery styles in our largest wholesale house show windows. But what has that subject to do with MEEHANS' MONTHLY? you will naturally question. Only listen, please,—the window was full of stuffed sea-gulls; ah! ever so pretty and innocent-looking bird corpses, designed to ornament women's headgear! This savagery to force on thoughtless feminines, who do not know the difference between a crow and a sparrow, and to whose depraved

taste of display people have to circumvent the growing sentiment against wearing song-birds, resorted to the destruction of the pretty sea-birds as less useful for the horticultural and agricultural world. How cunningly devised! To slaughter cruelly the winged companions of the air who delight every navigator or traveler with their animated presence! Let us all do our part to help extinguish this gruesome trade by trying to find out the sources; how caught and where prepared for display all birds come from that are sold. Have you space for the above?"

[MEEHANS' MONTHLY is devoted to wild nature and gardening. Birds are an essential element in this field. Anything is welcome that an intelligent person, in love with these pleasures, would be interested in knowing of. As to feathers in dress, the writer of this noted, when among the wild Indians, years ago, that it was the men and not the women who were the greatest sinners in regard to this. The Indian men would have bird feathers in every crevice that their scanty dress would permit, while it was rare to see a woman with one.]

MACHÆRANTHERA TANACETIFOLIUS.—Aside from the "daisy-like flowers" referred to in the main chapter (*Aster tanacetifolius*), which seem to have especially attracted the notice of the earlier botanists, the readers of MEEHANS' MONTHLY will take pleasure in the study of beauty which the whole plant suggests. Gracefulness in many things is rudely fractured by the intrusion of some heavy object, wholly out of place in a conception of perfect beauty. Here it would be difficult to note any inharmonious element,—and yet the great variety of pleasant features, so skilfully combined in one plant, is not often found in nature.

Besides the lesson in true art furnished, our picture presents good lessons for botanical students. A good lens is essential to a fair knowledge of composite plants.

FLORA OF OKLAHOMA.—That part of our country, formerly known as the Indian Territory, has a rich flora. Not including the woody plants, but confining himself to the herbaceous class, Prof. E. E. Bogue, of the Oklahoma College, finds there are about seven hundred species.

INHERITANCE OF ACCIDENTAL CHARACTERS.—Mr. W. C. Steele, of Switzerland, Florida, relates that he cross-fertilized a number of flowers of the white and crimson Cypress Vine. To effectually pollenize the flowers, the corollas had to be slit on one side. The seedling plants not only had an intermediate mixture of tints between white and pink, but also had the corollas slit as they had been slit by manipulation in the case of the parents. Mr. Steele is one of the most intelligent horticultural botanists, and can scarcely be mistaken. But the result is of such bearing on weighty questions, that it would be desirable to have many experiments of the same character.

VITALITY OF SEEDS AND PLANTS.—Sir Seymour Haden reports, from experiments carried on for twelve years in the burial of animals, that bodies buried 4 feet deep required more than four years for their complete dissolution; 3 feet deep, three years; 2 feet deep, two years; 1 foot deep, one year; while bodies, not buried but simply covered with a foot of earth, disappeared, all save their bones, in less than a year; but in all cases without injuring the purity of earth or air.

[And this is equally true of seeds and plants. In a low temperature and free from atmospheric influences, life is prolonged indefinitely. The writer of this paragraph has shown that vegetation under glaciers retains life until again exposed to the air.]

CHARACTERS OF SPECIES IN THE OAK.—Professor Rowlee notes, in the *Botanical Gazette*, that in addition to the cups, acorns and leaves, very good distinguishing characters can be observed in the male flowers of the oaks.

SALIX ALBA.—Very true to nature seems this willow tree, growing as the wind blows, this way or that way, at its own sweet will. "By the rivers of Babylon" there was weeping. I have seen, in Vermont, by the water brooks, a fence made of willow trees, and they were a refreshing, rustic sight, grand in their place, like all of Nature's own glorious works, but uncouth enough out of place. Once, I also saw, when we lost our way in New Hampshire, a fence made of the roots of huge pine trees, each side of the road leading to an isolated farm house, and there's a charm about its memory still. E. E. ORCUTT.

GENERAL GARDENING.

CARNATIONS IN WINTER.

'Tis a bower of Arcadian sweets,
Where Flora is still in her prime,
A fortress to which she retreats
From the cruel assaults of the clime:
While earth wears a mantle of snow,
These Pinks are as fresh and as gay
As the fairest and sweetest that blow,
On the beautiful bosom of May.
COWPER.

FORCING THE CAROLINA JASMINE.—The famous Southern Yellow Jasmine is a very interesting plant to experiment with in the North. Its roots are hardy as far north as Philadelphia, and, if the tops be protected, flowers may be had out of doors. Or plants may be potted and brought inside over winter, where they will bloom and add attractively to the usual assortment of forced flowers.

Our readers will recognize this plant as the one used in the design on the front cover of each issue.

GINSENG CULTURE AND MISSTATEMENTS OF ITS VALUE.—So many exaggerated reports are heard of the fabulous sums to be made from the culture of American Ginseng, Mr. Harlan P. Kelsey, of Boston, an experienced cultivator of this article, has undertaken to enlighten the public concerning the true facts, and freely offers any information at his command.

While pointing out the exaggerations, he is enthusiastic enough to say that it is an industry really promising most unusual returns for the labor and expense necessary to cultivate it successfully.

"It depends," says Mr. Kelsey, "on the individual grower, as in any other crop."

"The right conditions for its culture must be supplied, either naturally or artificially, and intelligent cultivation given. There will probably always be a good demand for the root at high prices, and it is an article commanding cash at all times.

The conditions for growing are readily found in nearly all the States of the Union or can be produced at reasonable cost of labor and material. They may be stated in a few words: —"A rich, deep, well-drained, and moist soil, containing abundant decayed vegetable matter and not too heavy or clayey. Humus or vegetable mold, obtained by using decayed forest leaves, is extremely beneficial, as is also thoroughly rotted compost. Shade sufficient to keep off the direct rays of the sun is almost necessary, particularly in sections where the heat is excessive. Add to this careful cultivation and you have the secret, if there really be any, of growing Ginseng successfully. Lath covers are perhaps the best artificial shade; and apple trees have been found good to keep the ground protected from the sun. At maturity the roots must be carefully and properly prepared for market, and the extra care taken to produce a fine article, clean, well graded and perfectly dry is more than repaid by the much higher price such roots will bring."

PRUNING TREES.—Recently, the attention of the writer was called to a tree that had a number of the lower limbs cut away, in order to give more advantage to grass and flowers desirable on the lawn beneath. The object was a good one. But all the branches had been cut to stumps projecting about six inches from the trunk of the tree. It would puzzle any one to give a rational explanation as to why these stumps were constructed? What purpose did they serve? The good gardener would have cut the undesired branches close to the trunk. New wood and new bark would then grow over the scars. But the stumps will rot, and the rotten wood cause sound wood to follow suit. The tree will become hollow and worthless in a few years.

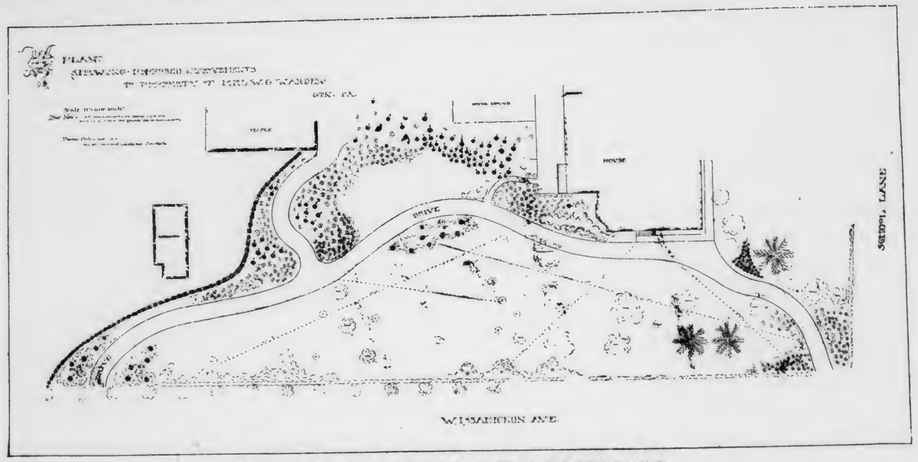
LANDSCAPE GARDENING.—There are underlying principles in all arts; and especially in the art of landscape gardening. But the practice of landscape gardening is usually in advance of the theory. What is or is not beauti-

ful is a matter of instinct. It is only after the impression is derived, that the reason thereof is sought for.

It is on this account that plans of successful work are profitable studies. They cannot be copied. Local conditions in each case must decide the arrangements. But they afford suggestions that are generally valuable.

For this purpose a plan is presented here of what is regarded a successful piece of work.

The plan shows a section of the property of Mrs. W. G. Warden, an old estate in Germantown, near Philadelphia, which was specially treated in connection with the re-arrangement of the carriage road. Situated almost in the heart of the built-up portion, where the area



SECTIONAL PLAN, ESTATE OF W. G. WARDEN, ESQ.

would not naturally be very extensive, and with a number of large, old trees to contend with in giving an expansive, open appearance to the landscape, care must needs have been exercised in the renovation.

Entering along the main drive one passes through groups of appropriate plants and beneath fine, large trees from which point glimpses of beautiful specimens on the lawn may be had. Likewise from the porch, house-windows and other points along the drive special groups or specimen trees are made objective points in the scene. Just as vistas are sometimes made allowing for views miles in extent, it is just as important to make on smaller places similar views on a smaller scale using some choice specimen trees or group as the objects. The lines on the drawing indicate where some such views are provided for.

Near the residence, between it and the drive, is a handsome bank of rhododendrons, which are found very appropriate for such positions. The stable, and road leading to same, is partially hidden by masses of evergreens.

The President's Favorite Flower.—The pink-tinted carnation is said to be President McKinley's favorite flower. At a recent reception given to him, in Philadelphia, by the Union League, each guest bore one on the lappel of his coat, and numerous designs of pink carnations were among the profuse floral decorations of the banquet hall.

Flower Beds in Cemetery Lots.—The practice of making flower beds of graves is happily becoming obsolete though but slowly. Under regulations quite generally adopted in recent years, mounds are not permitted, which encourages a better appearance under all circumstances. Mounds naturally shed water, resulting, as a rule, in sickly sod or weak plants where they are placed in that position. Not recognizing the cause, many persons are annoyed and puzzled by their non-success. Without mounds, the sod or plants above the grave have at least equal chance with the surrounding sod to get all the benefit of moisture and food in the soil that there may be.

But as regards flowers or plants on the mounds, under few circumstances do they look in place. How much better is it to give thought to the appearance of the whole plot, making permanent beds along the margins, using graceful outlines; place a few individual specimens where space will permit, either dwarf evergreens or flowering shrubs. Use hardy plants wherever possible. Annuals are pretty in a way, but it is rarely possible to give them the conditions and attention they require. A person with the artistic instinct and practical experience of a good landscape gardener could surely make great improvements in the usual methods of treating individual lots. Doubtless we are all more or less responsible for this, for natural sentiment calls us to personally attend to these duties which for lack of constant attention might better be placed in professional hands.

City Street Trees.—The question of trees in cities is assuming a more serious aspect than ever before. The famous French Boulevards, that give such an inspiration to other cities, are found to be very difficult to maintain. The dead or weakened trees are continually being replaced by ones as large as can be moved. The average life of a French boulevard tree is said to be about ten years.

Sheet asphalt roadways, and lithogen pavements, keep out the air, and suffocate the trees. To this trouble may be added telephone and electric wires and conduits, and the city tree has a hard time of it. Recent advices from London tell us that the famous avenue of Plane trees, lining what is known as the Thames Embankment Boulevard, is in danger of destruction from telephone and electric appliances.

But it is clear that the world must have these modern improvements, and whatever lies in the road will have to get out of the way. It is not impossible, in the opinion of Meehans' Monthly, to have city trees as well as all these modern improvements, if the right intelligence be employed to suit tree-culture to the changed conditions; but under the system of appointments to office prevalent among us, it is not likely there will be much advantage in this respect.

Bow-string Hemp.—One of the most valuable plants for vases, for conservatory or house decoration, is the *Sansevieria Zeylanica*, or Bow-string Hemp, as it is popularly called on account of the use made, by natives of the East Indies, of the fibrous portions of the leaves. In this respect it resembles the American Aloes, or *Agave*, which also furnish strong, hempen fibre. Our plant, indeed, is related to this Century Plant family. The leaves are not unlike some of the Agaves in form, but are flaked and barred by fleecy white among the green of the leaves. The plants are quite common with florists, though few seem to know the name. We are simply told they are common in cultivation in Florida.

The Crab-cactus.—The Crab-cactus, *Epiphyllum truncatum*, seems hardier than generally supposed to be. A correspondent of the *Florida Agriculturist* notes, that in one of the freezes that affiicted that section, many species of Cactus also perished, but the Crab-cactus sustained no injury.

The Sensitive Plants. — Plants for the pleasure and instruction of children are often sought for. The Sensitive Plant, *Mimosa pudica*, is an excellent one for this purpose. It is easily raised from seeds sown in spring. The habit is rather sprawling for a pot plant, but by a little pinching-in management, pretty, compact specimens may be obtained. Few plants give more interest to children in watching the leaves close or fall on being touched. Even grown people have their attention attracted by the remarkable motion.

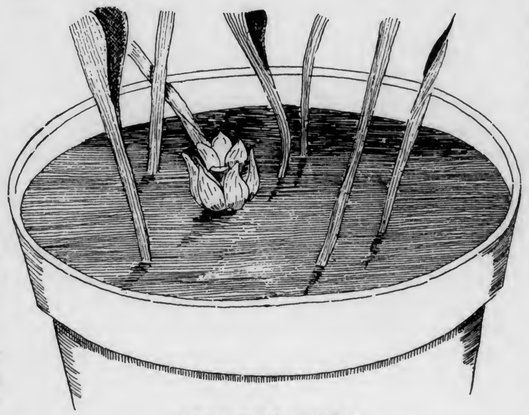
NEW OR RARE PLANTS.

Agdestis clematidea. — A correspondent writes in high praise of a new introduction from Mexico, *Agdestis clematidea*, which he represents as a vine amazingly resembling a Clematis. This must have struck the botanist who gave it the specific name. Being from Mexico, it will not add to the list of frost-resisting plants;—but it may prove useful in summer decoration,—or for other ornamental purposes.

Aspidistra lurida. — Miss C. A. Scott, Bryn Mawr, Pa., says:—"A strange little flower has shown itself in a plot of *Aspidistra lurida*. I enclose a rude sketch. I believe there are eight petals, four inside and four out,

but cannot be absolutely certain at one division without hurting the flower. It looks as though it belonged to the plant, but I never heard of the *Aspidistra* flowering. What is it? I do not like to disturb the plant by investigating the roots, unless there is good reason for doing so."

[Most flower-lovers know this plant, as it is one of the most useful for room ornamentation and in floral work, where bright green handsome foliage is desirable. Few, as our correspondent remarks, have ever seen the flower. This is probably more from being over-looked, as it generally appears hardly above the soil, and has a somewhat earthy tint. As it is, however, held by botanists to be somewhat of a floral wonder, the rough sketch sent has been engraved. No botanist knows exactly where to place it in the system,—though it is generally referred to some section of *Liliaceæ*, the lily family. The stigma seems a cap, as in a mushroom,—but the most remarkable feature is in the quarternary arrangement of the parts. Endogens are formed by nature on the type of three: Three sepals, three petals, three styles—or at least a three-lobed stigma, and a three-celled capsule, three or multiples of three. When there are less, abortion or consolidation with other organs can be traced. But to start on the type of four, more than the typical number, has not been accounted for,—and the plant, therefore, furnishes material for a story that has not yet been told.



ASPIDISTRA LURIDA.

PLAN OF FLOWER.

Another interesting point is that its native country has not been definitely ascertained. It is common in the gardens of China and Japan, and when now found wild is regarded as an escape from culture. Its home is undoubtedly somewhere in Asia. Has any one tested it for outdoor culture in America?]

THE RAIN FLOWER—COOPERIA DRUMMONDI.—The bulb, *Cooperia Drummondi*, is so named, in the far south, from the fact of the flower springing up like mushrooms after a heavy shower of rain. The flower starts to grow and is fully expanded a few days afterwards.

NEW AMERICAN BEAUTY ROSE, QUEEN OF EDGELEY.—One of the latest novelties in roses that bids fair to be popular to some extent is called the "Pink Beauty," or Queen of Edgeley. Large growers of the famous true American Beauty are not very sanguine of its prospects in general favor, however, as they consider the color is too much like the old variety faded. It was exhibited at the annual fall show of the Pennsylvania Horticultural Society in Philadelphia, and it naturally attracted considerable notice.

THE HARDY FLOWER GARDEN.

HUNTING SPRING FLOWERS.—Children enjoy hunting for spring flowers. It is one of the greatest pleasures of their young lives. Indeed, the enjoyment is not confined to children of a tender age. Those who have large tracts could add largely to these pleasures, by planting extensively of cheap bulbs in wild lands, for members of their own families,—or even for outsiders, if the circumstances favor. The writer has a piece of some acres in which the Bluebottle of the Old World has been making for itself a home during the past one hundred years.

Thousands now contest the ground with other wild things. The frost is barely out of the ground before the sweet little blossoms are open,—and among the bright spots of life is the witnessing of little tots, eager in their hunt for the floral treasures. In the Old World, it is a common practice to plant open woods with spring-flowering bulbs of various kinds.

HARDY FLOWERS FOR CUTTING.—While there is an abundance of flowering perennials for general purposes, it frequently occurs that for something particular, the available plants are not numerous nor easily thought of.

In this connection, an inquiry reveals the fact that early summer pink or white flowers suitable for cutting do not make a large list.

The following desirable hardy plants are mentioned for the purpose, and our readers may doubtless recall a few additional which may be suggested for the benefit of others:—

Achillea Millefolium rubra.	Lilium candidum.
Achillea Ptarmica plena.	Lilium speciosum album.
"The Pearl."	Lilium var. roseum.
Armeria maritima.	Paeonies.
Armeria plantaginea.	Pentstemon Digitalis.
Dicentra spectabilis.	Perennial Phlox.
Gypsophila paniculata.	Physostegia denticulata.
Hesperis matronalis.	Physostegia Virginica.
Heuchera sanguinea alba.	Pyrethrum roseum.
Iris Florentina.	Spiraea filipendula fl. pl.
Iris laevigata.	Spiraea Ulmaria alba plena.
Liatris spicata.	Spiraea venusta.

FRUITS AND VEGETABLES.

GREENHOUSE GRAPES.—Much of the pleasures of life depends on sentiment. A Black Hamburg Grape, in a high class feast, should be as eatable from a dish on the table as if cut from the vine on the dinner table. But all will tell that the latter is more enjoyable, and the custom is growing to have grapes in pots, laden with their juicy burdens, trained in arches and other forms over the viands below, and cut fresh from their stems for the delectation of guests. Strange to say, the grape vine, in the hands of a vine dresser whom it loves, seems to have a special pleasure in doing its best under pot-culture. Annexed is an illustration, from *Gardening Illustrated*, of how they are pot-grown under glass in England.

GRAPES IN POTS.

CAPRIFICATION OF THE FIG.—The manner in which the fig wasp acts in perfecting the fig, does not yet seem clear. Tournefort, in his book of travels, noted that, in portions of the Levant, the young figs fell off unless a small insect punctured the fruit. The fig growers have to hang the branches of the male trees, in which the insects are hatched, over the branches of the fruit-bearing trees. Every morning, during June and July, the fig-grower is at work supplying these insect-hatching fig branches, over the branches of the bearing trees. For two whole months, the Greeks perform this daily task. In this way, two or three hundred pounds of figs could be had from a tree, that, without this care, would have most of the young figs drop, so as to yield perhaps not over twenty-five pounds. This is the substance of Tournefort's observations made two hundred years ago.

Now it is well known that, under cultivation, no such trouble is taken, and yet the figs do not drop. No insect aids the garden fig-grower,—and yet he gets abundant crops. He takes it for granted that the seeds inside the fig are imperfect, and that the fruit might be larger if the fig-insect had introduced pollen; and yet, in view of the statements of Tournefort and others about the dropping of unfertilized figs in Syria, one cannot understand why the figs do not drop in his case.

The writer has never had the opportunity of examining figs known beyond all question to be caprified, until those received from Mr. Roeding of Fresno, California, recently noted. Large as these were, they seemed no finer than

the uncaprified figs raised under good garden culture,—and, strangest of all to say, not one seed could be found with a cotyledon. All tested were as hollow as a bag of wind! Clearly pollinization had nothing to do with the full growth of these figs. We must conclude that, if it be true that the figs of Syria fall in an early stage unless visited by the fig-insect, the manner in which they aid is as yet wholly unknown.

STORAGE OF APPLES IN WINTER. — It is very stale but oft repeated advice, to spread out winter apples and pears on shelves in the cellar, and the decayed ones to be removed from time to time. We must wholly disagree with such a course, for when exposed, the apple rapidly loses its moisture and becomes shrivelled, which also causes deterioration of quality.

On this account apples and pears in cool storage should be kept tightly closed, and they will open up plump and fresh.

The great secret for keeping apples and pears is a cool temperature, and 35° to 40° F. will be found most satisfactory. Usually apples are left to hang too long on the trees and become too much ripened; then they lie in piles or are stored in barrels in hot places, perhaps right out in the sunshine for weeks until the hot weather is over; then they are shut up in a warm, close, house cellar, with a temperature about 50°, and then the farmer wonders why his apples do not keep.

Let him try gathering them as soon as mature, pack them away at once in a cool place where the temperature does not rise above 40° and see whether the results are not much more satisfactory.—*Canadian Horticulturist.*

A COFFEE GROVE.—Nothing can be more beautiful and interesting than studies of the annual blooming, budding, growth, and ripening of coffee in the West Indies, and its gathering and preparation for the market. The leaves, which are ovate in form, are about four inches long. They are produced opposite in pairs, and are dark green in color. Similar in texture to the Mammee leaf, they have the waxen surface of the Indian Laurel. The foliage is perennial. Shooting out from the bases of these pairs of leaves, after the manner of our cherry blooms, are seen the coffee blossoms, almost precisely like a diminutive tuberose, in clusters of three to six, snow white, and with an indescribable delicate, subtle, and delicious odor. For two months in spring-time, a coffee plantation is simply one vast plain of white, a region of intoxicating odor, with the blue sky half shut from sight by myriads of honey-seeking butterflies, humming birds, and brilliant-winged songsters, fluttering and circling in an apparent ecstacy of revelry and delight. For nearly six months new blossoms come as the old ones disappear. Blossom and ripening berries are continuous. As the breezes snow the dying blossoms upon the ground, tiny green buttons take their place. These are the growing fruit. They change to a pale pink, then to a bright cherry, finally to a reddish purple. Then it is ripe and ready to gather.—*London Journal of Horticulture.*

[The coffee plant makes an interesting individual for conservatory culture, and can be grown with comparative ease. A plant 3 feet in height is capable of producing a few berries.]

GROWTH OF AN OLD POTATO.—In a recent issue of the MONTHLY, a correspondent refers to a potato that had grown the second year. He probably intended to convey the idea that a potato had remained in the ground a whole year without sprouting, and then grew the second season. This would accord with experience. If below the reach of atmospheric air, or the temperature too low, it might lie several years without sprouting—any live vegetation will remain dormant for an indefinite number of years under ice, or probably in any cold-storage vault, as the late Robert Douglas and others have proved by actual facts. It would be a new and very remarkable fact if a potato, once sprouting, and giving up all its stores of food to the new growth, should be able to perform the same office another season.

Q.

POTATO SPROUTS. — In Southwest Florida, some of the most advanced vegetable growers use sprouts largely for producing early potatoes, instead of sets as is customary further north. The "seed" potatoes are put in starch or similar boxes,—and, when the sprouts have appeared in abundance, are taken off, and set out, just as further north they do with sweet potatoes.

BIOGRAPHY AND LITERATURE.

DEFYING MISFORTUNE.

As some tall cliff that lifts its awful form,
Swells from the vale, and midway leaves the storm,
Though round its breast the rolling clouds are spread,
Eternal sunshine settles on its head.

OLIVER GOLDSMITH.

GOETHE.—To die for one's country may be safely regarded as the greatest of human sacrifices. No one can complain of the honors bestowed on naval and military heroes. There is, however, danger that other national benefactors be overlooked in the blaze of martial glory. Those who build up and develop deserve as well of their country as those who preserve it. For all the brilliancy of a Nelson or a Wellington, England would be shorn of much of her fame, had not she a Shakespeare; also Scotland but for her Burns; or Ireland her Moore;—and Germany understands the value of Goethe equally with that of her emperors styled the Great. It is pleasant to note the national enthusiasm on the great poet's 150th birthday. It is a lesson other nations may profit by. We, as Americans, owe Goethe much for the great impulse he gave to that rational study of plants that gives it a living pleasure to-day. We give some account of the poet and statesman in connection with botany, kindly translated from *Natur und Haus*, for MEEHANS' MONTHLY, by Mr. H. Cramer.

Johann Wolfgang von Goethe as Botanist.

"During the festivities in remembrance of the poet's one hundred and fiftieth birthday—shortly before the end of the century in whose developments Goethe's genius manifested itself thousand fold—his poetic productions,—his functions as statesman and his writings as scientist were recalled and admired. The various disciplines—inclusive the botanists—claim him, with pride, as one of their own.

It is not our object to enlarge on his high attainments as poet, statesman and his general scientific prominence, but view him as botanist. His interest for the plant-world and activity as practical and theoretical botanist dates from 1775, the year of his entrance into the cultivated society and noble court circles of Grand Duke Karl August of Weimar. Not contented with the narrow confines of the city, he turned his attention to the surrounding country, its gardening, agriculture, and especially the important culture of forests.

GOETHE'S BIRTHPLACE.

Close contact with men of practical experience stimulated him to use his influence towards various improvements in farming, never overlooking even trifles in promoting the progression and welfare of the tiller of the soil. During his rambles among the country people he learned, by them, to know herbs and roots used for healing purposes.

Gentian root, no small source of income for the gatherers, Goethe mentions as the first plant family arousing his desire to become acquainted with the rest of them. His love of

nature received especial impulse during his travel with Karl August, in May, 1878, when he visited the grand parks of the Prince of Dessan at Woerlitz. The impression of these parks, standing at the time in glorious spring-beauty, was felt so deeply, that he resolved the creating something similar in the vicinity of Weimar, in that valley, which he loved more than the rest of the world. After his return, work was commenced at once, so that, by July 1778, the so-called cloister could be inaugurated. The creation of this park, causing large expenditure, made that side of Weimar a temple and elysium, as poet Wieland expressed it. Here stands the garden house, presented to Goethe by Karl August. (Illustration.) In it he loved to dwell so ardently.

GOETHE'S GARDEN-HOUSE.

Stimulated by the help and advice of Dr. Buchholz, a prominent admirer of nature, Goethe resolved the creation of a botanical garden for the culture of exotic, rare and interesting and also of officinal plants. The Duke granted extensive land, offering tracts exposed to sunshine, shaded and moist nooks, etc., suiting the requirements of extensive varieties of plants. Under these conditions, Goethe was induced to seek more and more knowledge of botany. Linne's terminology and foundations of his system, Johann Gessner's dissertations and explanations of the Linne elements—all these compiled in short memoranda, he says, 'ever accompanied me during my rambles, and now, in my advanced years, I delight remembering those fresh, happy days, in which a new world disclosed itself to me. Linne's Philosophy of Botany was my daily study, advancing me further and further in knowledge and understanding.' Yes, Goethe confesses that, after Shakespeare and Spinola, the greatest impressions upon him came from Linne and his works.

Especial assistance or advantage in his botanical studies was afforded by the nearby academy at Zena, with her learned professors and the cultivation of medicinal plants.

The mere finding of names, and classification of plants into the Linne classes, did not satisfy Goethe. He endeavored to establish a more relative grouping of plants he desired insight in, what is to-day called the natural plant system.

In this endeavor he found assistance in young August Karl Batsch, later Professor at Zena, and Hofrash Buettner of Goettingin; and besides these through writings on Botany by Jean Jaques Rousseau.

During spring, 1785, he began microscopic investigations of the lowest organisms, near the lower boundary of the vegetable kingdom. He could truthfully say of himself:—'The vegetable kingdom has taken possession of my mind—I cannot rid myself of it for a moment, and I delight in my fine progress. Everything seems to meet me, and the enormous empire simplifies itself in my soul to such degree, that soon I will be able to read the most difficult problem. How much it would please me, could I convey my pleasure of this to others, but it is impossible!'

GOETHE'S MOSQUE.

During September, 1786, crossing the Swiss Alps, on his tour to Italy, new forms of plant-life, depending on climatic influences, met his eye. At the most, though, he recognized variations and abundance of foreign vegetation in the Botanical Gardens at Padua. Above all there was a high and broad wall, covered densely with a *Bignonia radicans* and its multitude of fire-red, bell-shaped flowers. Next a Fan Palm (*Chamærops humilis*) attracted his attention. This very palm is to the present day known as the Goethe-Palm, and especially cared for during the warm season in the open air, housed in a glass enclosure during the winter months."

GEORGE ELLWANGER.—The Buffalo *Express*, of recent date, publishes a letter from a Rochester correspondent of July 28th, paying a well-deserved compliment to the founder of the great nursery firm of Ellwanger & Barry. Mr. Geo. Ellwanger, who, in his 80th year, is still hale and hearty, and in his advancing years, takes as much pleasure in contemplating the grand work his firm has done in spreading the knowledge of trees, fruits, and flowers over the world, and especially in America, as in the substantial rewards good business ability has brought with it. Geo. Ellwanger was born at Wurtemberg, in Germany, and settled in the Genesee Country in 1835. He had previously studied gardening at Stuttgart, and, in 1838, bought out the small nursery in which he had been employed, and purchased eight acres more—the foundation of the great "Mount Hope" nurseries. Two years later he took into partnership Patrick Barry, and this continued in harmonious relationship until Mr. Barry's death, in 1890. Fruits and roses always received close attention from this firm, and the horticultural world owes much to them for persevering and intelligent efforts in the dissemination of most desirable kinds.

HISTORY OF TEA.—The first knowledge Europeans had of the use of tea by the Chinese seems to have been derived from the Embassy to the Emperor of China, from an East Indian company, an account of which was published in 1669, and translated into English by "J. Ogibbt, Esquire," of London. The plant seemed very abundant in the Province of Nankin. It was only found under cultivation. Nowhere was it seen wild. The plants grew as high as rose-bushes, and were planted on hills, three feet apart. The leaves are gathered in five sizes,—the larger leaves are the lowest on the bushes. The uppermost are the smallest, and furnish the highest price tea. The white flowers were about the size of a Sweet Briar Rose. The seeds sown in the ground produce plants that are very productive of leaves the third year from sowing. It is hardy enough to stand a little frost and snow. It takes the place of beer, in other countries, as a drink, and it is believed that the entire absence of gout, stone, and other diseases of the East, among the Chinese, is due to their use of tea instead of intoxicating drinks. The author says the Chinese found it good for "overcharged stomachs," and gives sleep to the restless; but in excess "increases the gall." Though three hundred years have passed since this was written, we have not had much better accounts of the plant since.

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INTENTIONAL SECOND EXPOSURE

GENERAL NOTES.

A WHISTLING TREE.—Theatrical managers are certain of this fact. They will not use the Whistling Tree, that is the *Tsofar*, for carpentering. In the *Pharmaceutical Journal* we are told that a gum is obtained from it, known under the name of *gédaref* or *Sennaar Gum*. It is a very interesting tree. According to Dr. Schweinfurth, as the wind blows across its branches, it produces a sound analogous to a flute. This musical property, wonderful in a tree, especially a gummy one, is due to the fact that the base of the prickles of the hirsute branches is perforated by a certain insect, which sucks the gum out and transforms all the thorns into little flutes. Happily we only see things of this kind in the south of Nubia. —Translated from *La Semaine Horticole*, by SARAH D. LANNING.

UTILITY IN GARDENING.—A point is sometimes attempted to be made that while farming is useful, gardening is a mere sentiment, and the lines between beauty and utility are somewhat tightly drawn. But even those who use this argument do not show by their lives that they have full faith in it. One man may look on a magnificent specimen of forest-tree growth with admiration of the beauty in every leaf and branch, while the next man be calculating the dollars he may make out of the lumber in the trunk. But after the bank account is swollen with the cash, pure utility will not permit him to clothe himself in a coffee sack nor his wife and family in garments of fig leaves, because he has no use for beauty. He does not travel on a dead level, dreary plain because there is greater expense and labor in getting to a mountain top, but admires the grand mountain scenery as deeply as the mere lover of nature. Indeed, a lover of any kind is more inspired by beauty than by ugliness, and a bank note would be less acceptable to any one if passed as a dirty piece of square paper, than with a neat picture of De Soto or some handsome face. To our mind, the objection sometimes made to gardening, that it has no utility in the economy of human life, should be classed with that department of literature known as "fudge."

COMMERCIAL VALUE OF APRICOT STONES.—The value of apricot pits is being commercially demonstrated this season. Time was, and not long ago, when the humble pit was a waste product, a valueless something that was spurned as being ever in the way. Later, it was dignified with a value; it commanded $5 a ton to be used as fuel under the boilers where steam power was generated. It burned well and made a desirable fuel. Now, the uses to which the erstwhile despised pit are put are many. The demand is running ahead of the supply and its value is continually increasing. It is made to yield up its content, of marketable poison—prussic acid; it gives a very desirable quality of "almond oil;" it enters largely into the manufacture of candy—in places, Germany for instance; it is even said to be useful in the fabrication of baking powder. These are some of the pits' possibilities. There are others.—*California Fruit Grower*.

INCOMBUSTIBLE WOOD.—In most cities, the losses from fire are so heavy that restraining laws against wooden buildings are continually being enacted. Perhaps the time may come when incombustible wood may occupy a place in building operations. There are many plants among the myrtaceous and cactaceous orders that have wood that will not burn. The wood is, however, too hard to work up conveniently; but surely it could be used by mortice and pins in situations the most dangerous.

CALCEOLARIA—"FISHERMAN'S-BASKET."—A very appropriate popular name for the *Calceolaria* is mentioned by a writer in *Lippincott's*, namely, "Fisherman's-basket." The peculiarly-formed flower resembles such a basket as closely as nature could make it. For oddity as well as beauty, it should be seen in conservatories more frequently.

HELIANTHUS LENTICULARIS

HELIANTHUS LENTICULARIS.

PRAIRIE SUNFLOWER.

NATURAL ORDER, COMPOSITÆ.

HELIANTHUS LENTICULARIS, Douglas.—Stalk erect, hispid; leaves alternate, petiolate, ovate, attenuate, towards the apex acuminate, three-nerved, serrate; heads large, slightly drooping; peduncles terete; involucral scales spreading, oval, acuminate, on the back scabrous; palea trifid; achenia two-awned. De Candolle's *Prodromus;* see, also, Watson's *Botany of Clarence King's Expedition.*

Within the past quarter of a century, botanists have come to regard this plant as the parent of the common Sunflower, which Linnæus named *Helianthus annuus.* They regard it as a development, or, as we should say of garden vegetables, that the Sunflower is an improvement, by garden art, from the species we are describing. Under this belief, the name *lenticularis* has been dropped, and *Helianthus annuus*, the name given by Linnæus to the cultivated form, adopted for the species. Our plant has, therefore, to be looked for, in modern botanical works, as *Helianthus annuus.* In botany, when two supposed species are proved to be identical, the earliest name should prevail. It is under this rule that the name *lenticularis*, given by Douglas, and published in the "Botanical Register," for 1825, plate 1265 (not 1225, as quoted one after another by various authors), has been dropped. In this case, however, the rule is scarcely applicable. If the common Sunflower is not a real wild flower of Peru, as supposed by Linnæus when he named it *Helianthus annuus*, but a form improved by those skilful gardeners, the ancient Peruvians, as they improved corn, potatoes, tomatoes, and other things for us, the species from which it was derived should be recognized and bear the name, though of more recent date than the garden variety bore. *Helianthus annuus* should be simply a garden variety of *Helianthus lenticularis*,—and not *Helianthus lenticularis* a variety of *Helianthus annuus.*

It is, however, the province of this work to illustrate the labors of contemporaneous botanical works, and to refer to them for full botanical details of the illustrations. *Helianthus lenticularis* would not have been retained for the plant, merely on account of the unfortunate misnomer referred to, but for the reason that it is not clear that the common Sunflower was derived from it, and it may yet come to be regarded as distinct. There seems to be characters in the disk-florets that are never apparent in the garden form,—and the characters of the leaves and the stems, though often similar, never coincide. The author has seen innumerable plants of either, in the most vigorous or most depauperate conditions, without experiencing difficulty in deciding which was which. In no case has he seen any tendency in *Helianthus lenticularis* to present us with *Helianthus annuus.* In brief, it is as probable that the common Sunflower originated from a species not yet met with in Peru, or perhaps extinct, as that it was derived from the species illustrated.

At any rate, it will do no harm to present our wild plant under the name by which it has been known for half a century. In order that students may make comparisons with the Sunflower for themselves, details of the flower to a greater extent than usual have been presented, as Figs. 1 and 2 show. It will be noted that, though the floret has characters by which it can be readily distinguished from the common Sunflower, it varies in its form according to the stage of growth. There are three rhythmic motions during the growth of the floret. The first growth ceases as soon as the tubular corolla has reached its length. After a short rest, growth is resumed and the stamens advance far beyond the corolla, when another resting stage occurs. This is represented by Fig. 1. Again resting, the next following advance forces the cloven pistil through the united anthers, carrying the pollen with it and ensuring self-fertilization.

HELIANTHUS LENTICULARIS

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PRAIRIE SUNFLOWER.

NATURAL ORDER, COMPOSITÆ.

HELIANTHUS LENTICULARIS, Douglas.—Stalk erect, hispid; leaves alternate, petiolate, ovate, attenuate, towards the apex acuminate, three-nerved, serrate; heads large, slightly drooping; peduncles terete; involucral scales spreading, oval, acuminate, on the back scabrous; palea trifid; achenia two-awned. De Candolle's *Prodromus;* see, also, Watson's *Botany of Clarence King's Expedition.*

Within the past quarter of a century, botanists have come to regard this plant as the parent of the common Sunflower, which Linnæus named *Helianthus annuus.* They regard it as a development, or, as we should say of garden vegetables, that the Sunflower is an improvement, by garden art, from the species we are describing. Under this belief, the name *lenticularis* has been dropped, and *Helianthus annuus*, the name given by Linnæus to the cultivated form, adopted for the species. Our plant has, therefore, to be looked for, in modern botanical works, as *Helianthus annuus.* In botany, when two supposed species are proved to be identical, the earliest name should prevail. It is under this rule that the name *lenticularis*, given by Douglas, and published in the "Botanical Register," for 1825, plate 1265 (not 1225, as quoted one after another by various authors), has been dropped. In this case, however, the rule is scarcely applicable. If the common Sunflower is not a real wild flower of Peru, as supposed by Linnæus when he named it *Helianthus annuus*, but a form improved by those skilful gardeners, the ancient Peruvians, as they improved corn, potatoes, tomatoes, and other things for us, the species from which it was derived should be recognized and bear the name, though of more recent date than the garden variety bore. *Helianthus annuus* should be simply a garden variety of *Helianthus lenticularis*,—and not *Helianthus lenticularis* a variety of *Helianthus annuus.*

It is, however, the province of this work to illustrate the labors of contemporaneous botanical works, and to refer to them for full botanical details of the illustrations. *Helianthus lenticularis* would not have been retained for the plant, merely on account of the unfortunate misnomer referred to, but for the reason that it is not clear that the common Sunflower was derived from it, and it may yet come to be regarded as distinct. There seems to be characters in the disk-florets that are never apparent in the garden form,—and the characters of the leaves and the stems, though often similar, never coincide. The author has seen innumerable plants of either, in the most vigorous or most depauperate conditions, without experiencing difficulty in deciding which was which. In no case has he seen any tendency in *Helianthus lenticularis* to present us with *Helianthus annuus.* In brief, it is as probable that the common Sunflower originated from a species not yet met with in Peru, or perhaps extinct, as that it was derived from the species illustrated.

At any rate, it will do no harm to present our wild plant under the name by which it has been known for half a century. In order that students may make comparisons with the Sunflower for themselves, details of the flower to a greater extent than usual have been presented, as Figs. 1 and 2 show. It will be noted that, though the floret has characters by which it can be readily distinguished from the common Sunflower, it varies in its form according to the stage of growth. There are three rhythmic motions during the growth of the floret. The first growth ceases as soon as the tubular corolla has reached its length. After a short rest, growth is resumed and the stamens advance far beyond the corolla, when another resting stage occurs. This is represented by Fig. 1. Again resting, the next following advance forces the cloven pistil through the united anthers, carrying the pollen with it and ensuring self-fertilization.

INTENTIONAL SECOND EXPOSURE COLOR PLATE

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COLOR PLATE

This stage is represented by Fig. 2. The stamens are then gradually drawn down to their original position at the mouth of the corolla tube. But another interesting change occurs at this stage. The corolla tube becomes enlarged at the apex, and is contracted below, so that what was cylindrical, in the early stage, becomes funnel-form. The lesson is that, in making comparisons with other species, the organs must be contrasted at a similar period of growth.

In regard to its general history, it may be well to give the original account of Dr. Lindley, when first describing it in the "Botanical Register," plate 1265. He says that it is nearly related to Mr. Nuttall's species, *Helianthus tubæformis;* "but the leaves are not cordate at the base, nor are the peduncles fistular and gradually thickened upwards to the base of the receptacle." It was introduced, by Douglas, in 1827. It is variable in character, and abounds over the greater part of the temperate countries situate in the interior and on the western coast of North America. "In sandy or parched ground it is a diminutive annual, scarcely a foot high; in moist or rich ground, 6 or 8 feet high. The native tribes, in the interior of North California, apply the grain to the same purpose as that for which, we are informed by Mr. Nuttall, the Indians of the Missouri apply *H. tubæformis*. They collect them in the autumn, and dry them on heated stones, or in wooden troughs with small embers, stirring them with a stick to prevent their burning. When dried, they are pounded and made into a sort of bread, which is not unpleasant."

The author of this paper was among the earliest to cross the Plains after the completion of the Union Pacific Railroad, and an interesting observation was that, although no signs of the plant's existence could be found on the prairies proper, the land disturbed by the operations of track laying abounded with the plant in many stages of luxuriance. Until that time, it was difficult to believe that seed would remain in the earth for an indefinite time, awaiting special conditions for germinating. But this was an argument for probability only. Since that time, more direct observations on other plants has satisfied the author that this popular impression in regard to the long vitality of seeds under these conditions is sound. He has had seeds, usually considered of low vital power, remain sound eighteen inches below the surface certainly for ten years, growing when brought to the surface. Though rather a coarse plant, the brilliant golden glow afforded by many acres of them in Nebraska and Colorado, in those early days of the settlement of those territories, gave rise to pleasurable sensations that will never be forgotten.

If we are to take this plant into the family of the genuine Sunflower, there would be much to say of it in connection with polite literature. In the "Botanical Register," already cited, Dr. Lindley says of its family name:—"*Helianthus* is derived from *helios*, the sun, and *anthos*, flower, in allusion to the singular phenomenon of the flowers turning to the sun in the morning, and following him through his course in the day." It is now understood that the heliotrope of Grecian mythology has been confused with helianthus. The ancient one came in bloom with the sun in his summer solstice only to find her God fleeing from her as autumn approached. *Helianthus* is, literally, Sunflower, from the striking resemblance of the flowers to conventional pictures of the sun. It does not follow the sun as intimated. And yet it probably has motion. The author has not made close observation on the Sunflower, but he has on several other species of the genus. In these, there is an upwardly curved—not laterally, and following the sun—kind of motion. In some cases, the flower lifts itself over from north-east to south-west; but in other cases from west to east, or from south northwardly. It occurs at night as well as by day. The cause of this motion, or its service in the economy of plant life, has not been satisfactorily determined; but it is certain it has no relation to the influence of the sun, nor has it any connection with the points of the compass. The Sunflower of the Greeks appears to have been the common yellow Chrysanthemum of Greece,—and this had a place in the garlands of Persian sun-worshippers.

EXPLANATION OF THE PLATE.—1. Floret in early stage, magnified. 2. Florets one day later. 3. Longitudinal section of receptacle and portion of flower stem. 4. Akene. 5. Three cleft bract from the base of the floret. 6. Shows the back portion of the involucral scales. 7. Upper portion of the flower stem. 8. Leaf from the lower portion of the stem. The plantfr om Kansas.

WILD FLOWERS AND NATURE.

A MOONLIGHT SCENE.

———one low light betwixt them burned,
Blurred by the creeping mist, for all abroad,
Beneath a moon unseen albeit at full,
The white mist, like a face-cloth to the face
Clung to the dead earth, and the land was still.

TENNYSON.

SQUIRREL'S FOOD.—In the November issue of the MONTHLY attention is called to the various foods of squirrels. During the latter part of the summer and autumn, I had frequently noticed half-matured heads of sunflowers scattered near the path in the rear of the house, but thought little of it, supposing it the work of children. One day I noticed a squirrel mounting to the roof of an adjoining and little-used building, and descending the chimney with one in its mouth; and on going to the attic, there was fully a half-bushel of heads gathered into a pile for future use. To-day (Nov. 26th), I find the pile very much reduced, with plenty of fragments strewn over the floor. The fully-grown clusters were evidently too heavy,—at least a preference was shown for those not fully matured.

BESSIE L. PUTNAM.

THE PRAIRIE SUNFLOWER.—Beyond its showy flowers, the Peruvian Sunflower cannot boast of many points of beauty. In this respect, our Prairie Sunflower outranks it. Robert Browning, in fact, derides it:—

"A flower I knew,
That changes ever at the sun's approach,
And in the vain endeavour
To live his life, has parted, one by one,
With all a flower's true graces, for the grace
Of being but a foolish mimic sun;
With rag-like florets 'round a disc-like face,
Men call the flower 'the Sunflower' sportingly."

But it is useful if not beautiful. The seeds furnish food for man and beast,—and on dry plains, where more pretentious bushes fail to grow, the dried sunflower stalks alone feed the traveler's fire.

FERN VARIATION.—In Great Britain, the forty odd indigenous species of ferns have sported, under purely natural conditions, into such an immense variety of abnormal types that it would be certainly well worth while for American fern-lovers to keep their eyes well open in the States for similar phenomena. The occurrence of these sports is so peculiarly sporadic, that it is impossible to form any theory as to their genesis. Insular conditions of climate and environment generally may be a factor, and considering that no less than 1,100 distinct forms were catalogued and described by Mr. E. I. Lowe, in 1891, since when a number of new finds have turned up in a wild state, there is a good *prima facie* argument to this effect; but on the other hand, it must not be forgotten that Great Britain is the only place where variety-hunting has been the hobby of many assiduous and persevering men for nearly half a century, and that one and all of these are and have been amateurs, and not scientific or professional botanists, whose quest is new species and genera, and who, until recently, have ignored abnormalities as beneath their notice. In the writer's opinion, wherever ferns are abundant, varieties may be found if specially hunted for—that is, if the masses of normal plants be individually examined.

True, now and again it happens that a "find," especially in districts virgin to the fern-hunter, may be a huge and conspicuous plant, as in one of my own discoveries, when a shoulder-high bush of *Lastrea montana cristata gracile*, with thirty-three crowns, met my gaze, by a streamside in Dartmoor, and required two men plus a horse and cart for its removal. On the other hand, however, the majority are more or less hidden by their often robuster companions, and only betray their existence by the tip of a frond. The writer's first find was of this class—a remarkable form of *Blechnum Spicant* (*B. s. concurrens*, Druery). This has the fronds evenly narrowed to about one-third of an inch, the side divisions being like small scallop shells. In this case, only a

frond tip peeped out of a mass of small, normal plants in a stone-dyke; but following this up, six were found, all radiating from same centre, a completely true plant which gives perfectly true progeny when sown.

I fully appreciate the argument which has been expressed in the *Fern Bulletin* that, in the States, the vast area and manifold conditions of climate render it possible to find absolutely new species which, in a well-hunted country like this, is scarcely conceivable; but on the other hand, there are hosts of people who may be fern lovers, but whose hunting area is small, and yet furnished abundantly with well-known species. For such, the hunting for varieties is always open, and the discovery of a thoroughbred find, *i. e.*, a beautifully symmetrical, distinct type is, as I can personally testify, a splendid reward for the time and trouble involved.

So far, despite the fact that many of our species are common to both countries, the "finds" in the States are extremely few; yet crested forms of *Athyrium filix-foemina*, and even of *Cystopteris fragilis*, are reported. Finds of the first were sent to me and were thoroughbred; while the latter has only afforded one crested type on this side, despite its abundance. A crested form of *Deunstaedtum* (?) is also reported to me by Mr. W. S. Moscow, and a truncate-thorned form of *Phegopteris hexagonoptera*. Some years ago, a curious sport of *Struthiopteris* was introduced from the States with, as I recollect, almost simple, and curled pinnæ; but this, I fear, has become extinct, on this side, being more curious than beautiful. These discoveries, sparse as they are, serve to establish the fact that American ferns do vary on similar lines to ours; and that, therefore, assiduous search may be repaid. Our common *Polypody* (*P. vulgare*) is, I understand, abundant in some places. Here this has afforded, under absolutely wild conditions, some marvellously distinct types far and away more beautiful than the normal. I, myself, possess about thirty-six varieties, chief of which are six distinct plumose forms in which the frond is transformed into almost a tripinnate one of very papery foliose character and extremely handsome. We have heavily-tasselled forms of this species, found wild about a dozen times, yet no two are alike. Then what would an American fern-hunter think of a form like *P. v. elegantissimum*, with three kinds of fronds, viz., quite normal, tripinnate in a charmingly slender fashion, and finally the tripinnation enhanced by nearly inch-long lingual extensions from more of the tips; and to crown the edifice, young plants, as bulbils, fringing the fronds in association with the same; yet this but meagrely describes my own specimen of this. This was found in Cornwall; but a second find is recorded in *Cœrmarthen* which from the fronds I have seen is identical, though I am not sure of its possessing the same peculiar multiformity of type. Our *Lastreas*, *Athyrium*, *Polystichum*, *Blechnum*, *Asplenium*, *Scolopendrium* and *Polypodium vulgare* have given us hundreds of wild abnormalities, as stated above, and few of the native species but have vouchsafed some departures.

My own collection embraces about five hundred of the best, including, of course, a number of types which have been obtained by selected culture, a separate branch of the hobby which has yielded glorious fruits. The Shield Ferns of Jones & Fox, and my own strain of plumose *Athyria*, have no parallels as regards delicacy of cutting, redundance of frondage and beauty of general effect; yet these, the finest of them, have developed in three or four generations, only from the wild find of abnormal extra division, which formed the starting-point in each case. Jones & Fox's incomparable Shield Ferns, *P. angulare plumosum densum*, and its companions, sprang from the first sowing of a merely decomposite wild find.

I am, however, travelling perhaps too far in this direction, the primary object of my paper being the encouragement of the search for the original material among the ferns which your readers may come across. It must not for a moment be imagined that it is only necessary to go carefully through the nearest clump or habitat of ferns to find something good. The finds are rare things, numerically, even here, and great perseverance is a sure gain now. Given this, however, I believe results will follow; and once a good thing has been found, and faith thus instilled into the finder, he or she will require no further encouragement. The fern fever will have been caught, and will inevitably run its course, transforming him or her into an enthusiastic hunter for evermore.

CHAS. T. DRUERY, F. L. S., V. M. H.

London, England.

GENERAL GARDENING

THE INTELLIGENT GARDENER.

Who drew, with careful hand and curious eye,
Truth from a flower, and wisdom from a fly,—
Who opened gates to Nature's secret store,
And Science thron'd where error reign'd before.

DESTROYING THE TUSSOCK MOTH CATERPILLAR AND BAG-WORM. — If persons would only realize the advantages and ease with which many obnoxious insects may be prevented from spreading, the troubles in summer would be greatly reduced. The Bag-worm—so-called because it lives in its "bag," or cocoon, even during its ravages of a tree—dies in the autumn; but the female first deposits a large number of eggs right in her cocoon, which is afterward her grave. These bags are easily detected in winter, hanging mostly from the upper branches of evergreen trees (the Arbor-vitæ seems a favorite), and may be picked or cut off and burned. When one knows the immense number of eggs which would thus be destroyed, the value of doing it is readily seen. The Tussock Moth acts in precisely the same manner as regards the deposit of eggs in her white cocoon, and the work of destruction would be the same. These silky, white cocoons may be found flat against the trunks of trees, under old boards, and around rubbish of all kinds. They are most easily found in early winter.

CEMETERY PLANTING.—In the line of thought recently suggested by MEEHANS' MONTHLY, the *Weekly Florists' Review* of recent date contains an answer to a correspondent on the subject of cemetery planting. In brief the writer says:—

"In the beautiful cemetery in which I do a great deal of work, the graves are rounded up in the old conventional style, and covered with sod. It would please the authorities of our Forest Lawn [Buffalo, N. Y.] very much if the graves were all level, to conform to the surface of the surrounding grass. It would save a great deal of work and the grass could be kept much fresher and greener, as the mounds dry out far more than the surroundings. I notice in the Greenwood Cemetery, in Brooklyn, that many of the graves are covered with English Ivy. I would say there is nothing better than this beautiful plant for the purpose, but it would not be hardy in Buffalo. It would suffer during the bitter snows of March while it was severely frozen. There are quite a few graves lately covered with *Vinca minor*, the common periwinkle. In situations where the graves are beneath the shade of trees, and grass is difficult to grow, the *Vinca* comes in excellent. It is perfectly hardy, forms a close material and looks green the whole year. It needs shearing every spring. Perhaps after a time, people will be satisfied to have the graves leveled, and then it will be much easier to grow the *Vinca* or the ivy on them, and I believe that the management of all cemeteries would be glad to have it so.

"In Forest Lawn no one is allowed to do any sodding or plant anything on the lot that would disturb the sod, but they have given permission of late to cover the graves with *Vinca* where desired. All the florist is allowed to do is to put iron or wooden vases on the lot, filled with flowers. Neither are there any fences. If suiting the general effect of the lawn, a tree may be on your lot, but if it is not a suitable place there is none allowed. This may seem to some a little arbitrary, but there is no doubt it is the ideal way to conduct a cemetery. I do not know of any material except the English Ivy, where hardy, and the *Vinca minor*, with us so good for the purpose of covering graves."

MORGANTON (N. C.) STATE HOSPITAL.—To the visitors and residenters of western North Carolina no place seems to attract so much attention as the "State Hospital" at Morganton. The site chosen for this magnificent work of "humanity" is a gently rolling plat, situated

between the Blue Ridge and South Mountains, and commanding a perfect view of the surrounding country. Here it is that patients suffering with diseases of the mind are carefully watched and nursed back to the pleasure of real life, under the guidance and skill of Dr. P. L. Murphy and his able corps of assistants.

The extent of the hospital grounds proper is in the neighborhood of 700 acres, and nearly all under cultivation. The orchard work receives a good share of attention, about 150 acres being devoted to it. The lawns at this institution are unsurpassed in North Carolina. All around the building is a double terrace, with steps at convenient distances, to enable visitors and others to reach the plateau on which the hospital is built. The lawns are in extent about 50 acres, and are all seeded with the Kentucky Blue Grass (*Poa pratensis*). This is found to be admirably adapted to this section (price included). A few years ago, Dr. Murphy had constructed three greenhouses on the combination plan, by Hitchings, of New York, and since their erection they have been a never-ending source of enjoyment to the patients. Cut flowers are supplied to them every week for their amusement, while quite a number get plants and take them to their rooms, and look after them. Generally, about the first week in November, a Chrysanthemum exhibit is held in the hall of the hospital. This is looked forward to as one of the social events of this district, and is open to all in the afternoon; while at night the patients have their inning. The blooms are all cut and distributed among the patients before they leave the hall. The flower-beds take up considerable time in arranging and planting out, requiring in the neighborhood of 250,000 plants and bulbs. Time nor space will permit us to go into detail, but we cannot close without mentioning Mr. F. M. Seroggo, the efficient steward of the institution, on whom the greater part of this work devolves.

Nor yet should the head-gardener be neglected in receiving due share of credit, for, after all, what would even a good hospital be without attractive surroundings, to cheer the hearts of the afflicted ones? We may well believe that a contented heart and mind will work hand in hand with medicine in giving speedy relief from most all ills; and surely flowers, fruit, and a pretty landscape are appreciated by every one, and give one of the strongest touches of home-life that is possible. To manage successfully extensive gardening operations of a varied nature, is no small matter, and the surroundings of this institution give evidence of a good guiding hand in that respect.

A SCENE IN A BOTANIC GARDEN, BRITISH GUIANA.

A Garden Scene in British Guiana.—British Guiana is familiar to our readers by the large number of the beautiful orchids with which our conservatories are adorned. They, indeed, furnish the chief floral ornaments of these regions. The forests are made up of trees that have unattractive flowers, and palms that have graceful foliage, but nothing to boast of in the way of bloom. But Nature seems to have regretted her parsimony in this regard, and made up for it by having trumpet vines, with gaudy flowers, climb over them,—and epiphytal orchids, with their sweet and lovely blossoms, cling to their branches. The palms, however, always charm by their foliage, and are an essential part of garden scenery.

Accompanying this is a view taken from one of these gardens, from a photo kindly sent by our attentive correspondent, Mr. Joseph C. Roop, of E. Stroudsburg, Pa.

Removing Large Limbs of Trees in March.—I am always interested in your statements relating to trees, and generally fully agree with them, but your statement that "it is practicable to remove the large lower limbs from trees at any season of the year," I think, conveys an erroneous idea. Of course, it is practicable; but is it the best practice? My observation led me to believe that the removal of large limbs from apple trees in New Hampshire in the month of March caused their knots to rot and weaken the trees, instead of becoming dry and remaining sound. Such was the fact in several iustances, and I supposed such would generally be the result. Am I not correct? J. C. Lyman.

Exeter, N. H.

[The article mentioned may have caused erroneous ideas in the minds of some, though the facts are correct. March may be a hard month on the knots of the trees pruned; yet, if the advice in the whole paragraph be carefully followed, it should make no difference in the results. To quote from it:—"In any event, it is desirable to paint the wounds with thick ordinary paint, or something that will keep out the air and moisture." If this be done, renewing it "until the new growth of wood covers the wound," there can be no decay nor weakness while the coating remains to keep off the air and moisture.

"Is it the best practice?" That depends entirely upon circumstances. In horticultural practices it is best to do whatever is needed at once, if possible, or during a period when there is but little other work to be done. Therefore, if the removal of the limbs in March is particularly desired for some cause, or it fits in better with other work, that is the best time to do it, provided always that the coating of the wounds be made and kept perfect.

Possibly something, as the oozing of sap, will prevent the protection of the wounds; but this is likely to occur in much earlier months than March. The pruner must then keep watch of his tree, and paint the wounds as the conditions permit.]

Fall and Winter Beauty of Viburnum opulus.—No brighter effect in massing shrubs or in mixed groups can be formed than by the use of the High-bush Cranberry, so-called from its cranberry-like fruit, a large-growing native shrub, botanically called *Viburnum opulus*. While its foliage and flowers are to an extent ornamental, the numerous bunches of fruit of a clear, bright red color in the fall and winter, make a gorgeous display, rivalling all other ornamental berry-bearing plants. It is perfectly hardy, even where winters are most severe.

Cork.—Many of us are surprised when brought face to face with the fact that what we have easily to hand we know the least about.

BRANCHES FROM THE CORK TREE.

Cork is a familiar illustration. Few know that it is part of the bark of a tree,—and still fewer that it is formed by a species of oak, the *Quercus Suber* of Linnæus,—*Suber* being the

classical Latin for cork. A very interesting little pamphlet before us, entitled "From Forest to Pharmacy," issued by the Armstrong Cork Company, of Pittsburg, Pa., apparently for gratuitous distribution to its patrons, tells the whole story from the tree, as it sprouts from the acorn, until the cork finds itself in the druggist's bottle. The accompanying illustrations have been taken from this source. One shows a branch with the acorns among the holly-like leaves; the other the mature tree, and how it looks when denuded of its valuable coating. It is only the outer layer that is decorticated, the inner bark continuing the vital processes necessary to the further growth of the tree.

BERBERIS THUNBERGI.—One of the most useful ornamental shrubs in cultivation is the Japanese Barberry, *Berberis Thunbergi*. For the purpose of a dwarf hedge, it is the best known plant in use. It makes a pretty specimen singly on a lawn appropriately located, or in masses bordering shrubbery plantings. The foliage is small, neat, and colors richly in autumn, when the plant is further ornamented by scarlet berries. Further, it is very hardy, and stands almost any position. It is undoubtedly an all-round plant.

HARDY VINES.—Two of the most hardy vines are *Celastrus scandens*, commonly called Bittersweet or Staff-vine, and the Chinese Matrimony Vine, *Lycium Chinense*. Both bear scarlet fruit, which is very ornamental in fall. They are unusually handsome and distinct from other vines in foliage, and could be used oftener to advantage than is done. The *Lycium* makes a twiggier growth, and is not more than of a half-climbing nature; while the *Celastrus*, by pruning, can be similarly grown. The latter has a habit of twining its own stems around each other, making at times a stout stem or rope, which doubtless accounts for the name of Staff-vine. A prominent feature of each is the deep green color of the foliage.

BEHAVIOR OF LAWN GRASS IN SUNNY AND SHADY PLACES.—What seems a contradiction of customary results in connection with the behavior of lawn grass, came recently before the conductors. It is a general cry that grass will not thrive beneath large trees in its shade, and most efforts to improve lawns are in that direction. But in the present case, the grass is thriving beneath the trees, and outside in the sun the sod is poor and largely occupied by fall grass.

To solve the mystery and account for this apparent contradiction, we must understand why grass does not usually grow well beneath large trees. This is explained in the fact that the roots of a tree naturally use up the fertility of the soil—the moisture and mineral foods—and the longer the tree has been established, the less substance remains in the soil, and this will be used up with greater proportionate rapidity than before. Mere shade has but little deteriorating effect on the grass, provided there is food and air.

A CORK TREE PARTLY STRIPPED.

In the case before us, the lawn had been renovated, replenished with food and seed fresh sown. There was no reason why it should not do well beneath the trees while the good conditions lasted; and

the shade was a benefit to the new grass with such little root. Apart from the trees, exposed to the sun, the grass did well till towards midsummer, when the heat and drought proved too much for the tender grass plants, and many succumbed to be supplanted by the fall grass. It was proposed to plant rapid-growing trees, like poplars, that the grass might receive shade; but this would be but a temporary measure so long as the roots were allowed to feed as they choose without the soil being well replenished. The same end would be gained by sowing oats with the grass. Being strong-growing, they would shade the grass till it obtained a good roothold, and by keeping it cut occasionally with a scythe, it would not grow too large, and prove detrimental.

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IRREGULAR GROWTH OF SEEDS.—It is a common experience to have seeds come up irregularly. Some come up in a few days after sowing,—others not for weeks; and, in nursery culture, many will not come up till the following year. Many unsatisfactory reasons have been given for this. Mr. W. C. Steele, of Switzerland, Florida, has been making tests by soaking seeds in water. Bony seeds have been three months in water, and some will swell and germinate at various periods before this time has been reached. As the seeds were from the same tree, gathered at the same time, it must be evident that the peculiarity is in the seeds themselves, and has little reference to the treatment by the cultivator.

ENGLISH IVY FOR SHADY PLACES.—The need for a vine that will thrive in shady places is often felt, and perhaps no other meets the want better than the English Ivy, *Hedera Helix*. In fact, as between full sunlight and moderate shade, it will prove more satisfactory in the latter position; during the winter the sun is injurious to the evergreen foliage. Under greenhouse benches in rather dark places, through open cellar windows into a house and beneath trees, this ivy has been seen luxuriantly growing. For covering bare spaces beneath trees it is most excellent.

NEW OR RARE PLANTS.

NEW LORRAINE BEGONIAS.—The Begonia, "Light Pink Lorraine," is supposed to be a sport from the original "Gloire de Lorraine." There is some doubt as to its true origin. It came among a lot of the original Lorraines which I received from a gentleman in exchange for other plants. When written to for information as to what it was, he could not tell. It is not only distinct in the color of the flower—being a very delicate shade of pink—but the flower is also larger, and the habit of the plant is more compact in its manner of growth; yet it is more robust, and from testimonial evidence received it stands the change or adverse conditions, which plant-life is frequently subjected to, better than does the original variety.

Wyndmoor, Pa. EDWIN LONSDALE.

[A beautiful exhibit of this new Begonia was made by Mr. Lonsdale at a recent meeting of the Chestnut Hill Horticultural Society, where it was seen side by side with the ordinary Gloire de Lorraine. The compact, robust growth, mentioned by Mr. Lonsdale, was quite noticeable; the peduncles were stouter, holding the flowers more erect, making a finer display. The value of its robust character is testified by its more lasting qualities.

The Lorraine Begonias, whether the original or its sports, may be considered among the most treasured plants for decorative purposes. Too much cannot be said in their praise. A well-grown plant is simply a dense crown of blossom to the pretty, green foliage beneath. Growers say that the most successful method of growing them is to confine them to small pots. Plants from cuttings can be brought to a beautiful blooming stage within a very few months, and these will continue to bloom for six months. A pretty combination is made by planting Maiden-hair Fern around the Begonia in a six-inch pan.

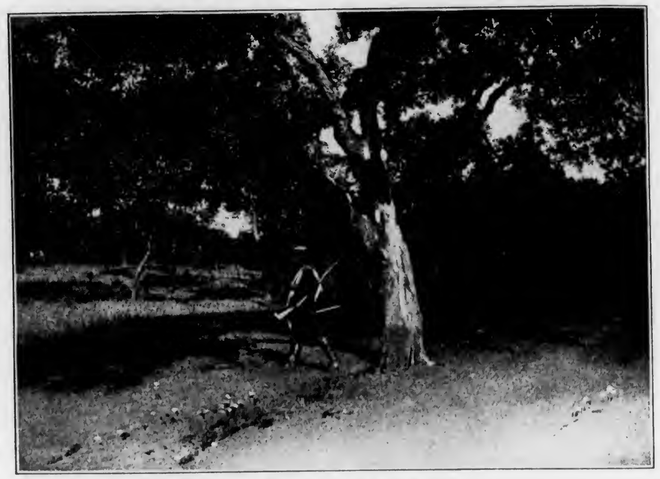
Another new Lorraine is a white sport named Caledonia. Some fear its whiteness may not prove permanent. In any event, it will never be as popular as the pink varieties, yet very valuable to combine with them.

FLOWERING OF THE BONAPARTEA.—"*Bonapartea juncea* alluded to is in flower now and open in the lower portion of spike. I may add that the plant that was in bloom when I was

classical Latin for cork. A very interesting little pamphlet before us, entitled "From Forest to Pharmacy," issued by the Armstrong Cork Company, of Pittsburg, Pa., apparently for gratuitous distribution to its patrons, tells the whole story from the tree, as it sprouts from the acorn, until the cork finds itself in the druggist's bottle. The accompanying illustrations have been taken from this source. One shows a branch with the acorns among the holly-like leaves; the other the mature tree, and how it looks when denuded of its valuable coating. It is only the outer layer that is decorticated, the inner bark continuing the vital processes necessary to the further growth of the tree.

BERBERIS THUNBERGI.— One of the most useful ornamental shrubs in cultivation is the Japanese Barberry, *Berberis Thunbergi*. For the purpose of a dwarf hedge, it is the best known plant in use. It makes a pretty specimen singly on a lawn appropriately located, or in masses bordering shrubbery plantings. The foliage is small, neat, and colors richly in autumn, when the plant is further ornamented by scarlet berries. Further, it is very hardy, and stands almost any position. It is undoubtedly an all-round plant.

HARDY VINES.—Two of the most hardy vines are *Celastrus scandens*, commonly called Bittersweet or Staff-vine, and the Chinese Matrimony Vine, *Lycium Chinense*. Both bear scarlet fruit, which is very ornamental in fall. They are unusually handsome and distinct from other vines in foliage, and could be used oftener to advantage than is done. The *Lycium* makes a twiggier growth, and is not more than of a half-climbing nature; while the *Celastrus*, by pruning, can be similarly grown. The latter has a habit of twining its own stems around each other, making at times a stout stem or rope, which doubtless accounts for the name of Staff-vine. A prominent feature of each is the deep green color of the foliage.



A CORK TREE PARTLY STRIPPED.

BEHAVIOR OF LAWN GRASS IN SUNNY AND SHADY PLACES.—What seems a contradiction of customary results in connection with the behavior of lawn grass, came recently before the conductors. It is a general cry that grass will not thrive beneath large trees in its shade, and most efforts to improve lawns are in that direction. But in the present case, the grass is thriving beneath the trees, and outside in the sun the sod is poor and largely occupied by fall grass.

To solve the mystery and account for this apparent contradiction, we must understand why grass does not usually grow well beneath large trees. This is explained in the fact that the roots of a tree naturally use up the fertility of the soil—the moisture and mineral foods—and the longer the tree has been established, the less substance remains in the soil, and this will be used up with greater proportionate rapidity than before. Mere shade has but little deteriorating effect on the grass, provided there is food and air.

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THE HARDY FLOWER GARDEN.

HERBACEOUS PERENNIALS AS A POWER IN LOVE FOR HORTICULTURE.—To those already interested in some line of horticulture, it is difficult to realize the comparative indifference of some persons, beyond a passing interest in some beautiful flower or plant before them. The class which the former represent carries with it an innate love for everything which nature reveals in so many charming and interesting ways; and it is supreme happiness for such to be so situated they may enjoy the constant privilege of close communion with nature in her many forms.

The writer's experience confirms him in the belief that nothing is more conducive to the creation of love for plants than to familiarize one's self with what are termed hardy herbaceous perennials. By their character, they are made available for cultivation in comparatively small areas; and as the number of species and varieties is great, plants adapted to any situation may be readily selected.

By this it may be seen that such a study would not be confined to those having only

large grounds at command. A bed or border seventy-five or one hundred feet long, artistically skirting a side or rear lawn would add wonderfully to the attractiveness of the place and could contain a considerable variety of plants calculated to bloom all season long, from early spring to late fall. That is to say, each individual kind of plant blooming at a different period from the others would in the whole flowering season cover that length of time.

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Not the least important fact in support of the praise given these plants is that they largely care for themselves. Perennial plants grow and give pleasure for the summer, die to the ground and come again each succeeding season. But a bed once planted does not usually remain unchanged. One of the chief pleasures is in adding to the collection something new, placing them here or there as space will permit. Nearly always may a spot more or less bare be found for such a purpose.

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land State Horticultural Society, after valuable and apparently exhaustive addresses by Mr. Morrill and Mr. J. H. Hale, on peach culture. Prof. L. H. Bailey, of Ithaca, showed the necessity for caution—particularly in the matter of cultivation. On heavy soil, it is impossible to cultivate but infrequently, when the soil is perfectly dry. As a rule, however, light soil is selected for peaches.

IMPROVED STRAWBERRY CULTURE. — The amateur gardener can often adopt modes of culture, favorable to excellence, that would be hardly profitable for the market gardener. In strawberry culture, for instance, it is said that much finer and more toothsome berries can be obtained by setting the plants out on ridges than when grown on the level ground. The earth is thrown up into a wedge-like form a foot or so in depth, and then flattened on the apex by the back of a spade so as to be only about nine inches deep. The plants are set out about a foot apart along this narrow table on the top of this ridge. The result is said to be a surprise to those who are familiar only with the ordinary flat culture.

ROTATION IN GARDEN CROPS.—Watever may be true in farming, the practical gardener usually understands that the general rule adopted by the farmer, as to the rotation of crops, does not prove to be of equal necessity in gardening. But there can be no rule for this. The good gardener alone must decide for himself in each case. For some kind of crops, and under some conditions, a change of crop from year to year, may be desirable ; but with good judgment in each case, such a course may not be necessary. The potato, especially, under proper treatment, has been grown successfully on the same ground for half a score of years. Some special manure is desirable ; but brains constitute the best fertilizer.

PEACH-GROWING NEAR PHILADELPHIA.—The peach is a tree that demands more or less attention to secure first-class results, and, in the writer's opinion, it was lack of this which caused an impression to exist for a number of years, among residents near Philadelphia, that peaches could not be grown in that locality. This refers, of course, simply to smaller resident places and farms. In reality, there is perhaps no betttr section for successful peach-raising, as has been evidenced in a small way by numerous scattered trees and by a fair-sized orchard or two.

Within twenty miles of Philadelphia proper (and that does not remove the location very far from the city's outskirts) is a very successful orchard—successful from financial standpoint as well as from that considering quality of fruit. Here, the buds are not advanced prematurely in the late winter and then frozen by further cold weather, as they are in certain sections of Delaware, Maryland, and other States almost year after year in quite recent times ; but the crops are as regular as the habit of a peach tree will permit.

Pennsylvania as a whole has frequently received authoritative commendation for its fruit-growing possibilities. While other States may grow larger fruit, the quality here produced ranks high. The soil, as a rule, is good and calculated to support the trees for long lives. This is especially necessary for the peach, naturally a short-lived tree. In poor soil, it grows weakly and is consequently less able to withstand the attacks of diseases.

Let no Pennsylvanian despair of raising good fruit and particularly of the peach, provided he will give his trees the ordinary care they deserve. Unfortunately some fruits, the apple, for instance, will struggle along and give considerable fruit (of doubtful quality) for years, with very little attention, and by this people are encouraged to let their peaches go along in the same manner.

FOOD-VEGETABLES OF THE NEW ZEALANDERS.—The Rev. Theodore Wood, a missionary among the natives of New Zealand, gives the following account of some plants used as food by these people. He says :—"The pith of the young "Nikau" palm, the only representative of the true palms in the antipodes, as making a most palatable and nutritious diet, and eaten with a little salt is equal to white celery or the Spanish nut. The sap of the mature "Matai," or black pine (*Podocarpus spicata*), is much prized by the natives and settlers as a cooling, sparkling beverage, when engaged in felling timber, shooting birds, or hunting the wild pig in the bush. Another curious article of food is the now well-known fungus (*Sphæria Robertsii*) growing out of the

head of a large caterpillar, found under the "Rata" tree (*Metrosideros robusta*), of which the Maoris are said to be very fond. Many other species of fungi are no doubt edible if carefully selected. The roots of the common bracken "Raorao" (*Pteris esculenta*), once the principal food of the Maoris, and the cabbage tree "Ji" or *Dracena Australis*, nearly allied to the palms, are still used as food. These are prepared in rude improvised ovens, consisting of stones previously heated, on which the roots are placed, well covered, and left for many hours until sufficiently cooked. The roots of the cabbage tree are specially cultivated for this purpose by planting them on large stone slabs to arrest the downward growth of the root and to encourage the lump or cake-like form of the same. The sow thistle (*Sonchus oleraceus*) is also used and much relished as a substitute for cabbage both by the natives and settlers, as well as the roots of a flag rush called "Raupo" (*Typha latifolia*), common everywhere in swamps and river banks, which make an excellent pickle."

ASPARAGUS CULTURE. — Since the proper treatment, in regard to cutting of asparagus, was noted in MEEHANS' MONTHLY, the subject has been taken up in many quarters, and many good ideas have been brought out from our best practical gardeners. The consensus of opinion seems to be that, from the first starting of the plant in spring, the weaker shoots should not be cut, but left to produce the leafage so necessary for the production of strong roots. One gardener makes the novel suggestion that the very best success in getting first-class asparagus is to select the plants all of one sex. His plan has been to set one-year-old plants in a bed rather closely together and mark the berry-bearing or female plants for the permanent bed. These, he says, have always borne strong shoots far superior to the beds of the usually mixed sexes. But he regrets, now, that he did not select the barren or male plants, as he believes these, being relieved from the expenditure of food in seed-bearing, would have more nutrition to spare for roots and shoots. But this speculation would hardly stand. It has been demonstrated, by Thomas Meehan, in his various papers on the laws of sex, that the male plants of asparagus and male plants and male flowers generally, are male because of a lower grade of vital power than those that produce female flowers. Under this law, a bed of male plants of asparagus would be inferior to a bed of female ones in the vigorous growth of their stems and branches.

VEGETABLE RAISING BY CORPORATIONS.—In the early volumes of this magazine, we noticed that, in some parts of the Old World, companies were formed for the special purpose of raising a particular kind of vegetable. In our own country, there has not been much attention given to this, although in Michigan, some individual growers cultivate celery on a magnificent scale. There are several tracts of land which are especially devoted to some certain kind of vegetable to a great extent,—and this is particularly true of the celery. Recent attention has been given to this method of doing a business in vegetable growing in California. In San Louis, Obispo Co., it is said, ground occupied by the celery companies comprise nearly one thousand acres. Titles of these companies seem strange to those not accustomed to seeing them,—for instance, we have the West Minister Company, the California Celery Company, etc.

Strange to say, most of the celery raised there goes to the East. Kansas City is said to be the central point for distribution. The cost of growing it, in California, averages about $25.00 an acre ; and to dig and ship to Kansas City, about $35.00 an acre more.

FIGS IN INDIANA.—Mr. Henry Stede, Richmond, Indiana, says that two varieties of fig are grown there, a small black one (Italian) and a large white one (Smyrna). They have stood, for a duration of one week, a temperature of 15° to 20° below zero, producing fair crops the following season. The trees are bent down in the fall as previously described in MEEHANS' MONTHLY, but are simply protected by a heavy mulch of leaves covered with brush instead of earth.

CALIFORNIA PEARS IN ENGLAND.—California Pears now reach England in such fine order as to rival the best French fruit. The kinds relied on, in California, for the English trade, are the Hardy, Clairgeau, and Duchess.

BIOGRAPHY AND LITERATURE.

THE GOOD NAME.

We ask no flowers to deck thy tomb;
Thy name, in purer light, shall bloom,
When every flower of earth is dead,
And all that bloom below are fled.
PERCIVAL.

THE STORY OF PHILADELPHIA.—By Lilian Ione Rhoades, published by the American Book Company. The story of Philadelphia, is really the story of the whole country, for it was there the Union had its birth-place; and what is interesting in its story interests all. This book has aimed to glean from history all those essential points that every American would like to know, and presented in a form that will interest young people especially. As of especial interest to our readers, it may be noted that a question often asked is the age of the great American Elm trees in Independence Square. They were planted, it appears, by Samuel Vaughan, in April, 1785, so that they are not near the great age often supposed. The history of Bartram and his garden is very instructive.

H. W. S. CLEVELAND.—Among the eminent landscape gardeners who have done much to advance the beautification of public parks and gardens, Mr. H. William Staler Cleveland owes a prominent place. He was besides the author of standard works on his much-loved profession. He was born at Lancaster, Mass., in 1814, and died at Hinsdale, Illinois, on the 5th of December.

THE "1900" SUPPLEMENT TO THE DICTIONARY OF GARDENING.—Published by L. Upcott Gill, London, England, and Geo. T. King, Hyde Park, Mass. The Dictionary of Gardening, familiarly known by many as "Nicholson's," after the collator and famous curator of the Royal Garden at Kew, England, is a work of seven volumes issued in———. For many years it was—and still is—a very valuable work, particularly to amateurs and horticulturists who found frequent need to investigate concerning some plant, foreign or domestic, hardy or tender. It contained just the kind of information one needed to identify plants without having to give a close botanical analysis of nearly the entire genus. Numerous illustrations appeared on every page, and these were very helpful. No attempt was made to describe every plant in existence, but rather all those with which one would likely come in contact.

But within recent years, the Dictionary of Gardening began to fail in its entire usefulness, as there were many newer plants not included. The supplement of four volumes brings the work right up to date and makes it again a very valuable work. Both the old and new are so arranged it is an easy matter to get information on any subject of culture; though for American use, everything suggested cannot be adopted. As a whole, it is a very commendable work.

THE WOODMAN SPARED THE TREE.—A Hartford (Conn.) correspondent, not writing for publication, says:—"I must tell you a singular deed showing the love of trees of our late Bishop Williams, of the Episcopal Church, as told in the *Hartford Times*, who once put down his foot on the tree slayers who cut the fine elms down on the street where the Berkeley Divinity School in Middletown is located. When the workman approached those trees on the grounds of the school, the good Bishop said 'halt!' 'If you cut down these trees, I move the school out of this city.' It had effect. The grand elms were left undisturbed. Though he be dead now, at the age of 82, may his example be kept green whenever necessary shade trees are in danger of annihilation."

DERIVATIONS OF THE NAME SEDUM.—Britton and Brown, in their truly great work, "The illustrated Flora of the Northern United States, Canada and the British Possessions," give the pronunciation of the Stone-crop—*Sedum*—as Se-dum, and say that the name was derived from "Latin, to sit, from the lowly habit of these plants." The logical mind will wonder how these plants are more "lowly," or "sit on the ground" better, than hundreds of other species. It is singular that these learned authors should adopt such a dull explanation. In Vol. I, first series of "Meehan's Native Flowers and Ferns of the United States," page 85, issued in 1878, it is shown that our House Leek was the original Sedum of the ancients; and that the plant being commonly used as a poultice for assuaging the pains of burns, scalds, etc., derived its name from these assuaging properties,—and that the pronunciation should be Sed-um, and not Se-dum. But it is hard work to uproot error.

CULTURE OF THE GRAPE.—It is estimated that there are nineteen million acres of land in the world under vineyards—of this total, France claims nearly one-third; she had more before the phylloxera appeared, but replanting is rapidly making good the loss, as the cultivation of the grape, whether for table consumption or wine-making, is very remunerative, as evidenced by the well-being and contentment of the growers. Besides, the culture of grapes affords constant and agreeable employment nearly throughout the year. The culture of the vine, M. A. de Candolle asserts, can be traced to the Bronze Age, as seeds have been found in the lake dwellings of Castione, in Italy, and leaves of the vine have been discovered in the soft stone subsoil at Montpelier, which coincides with the pre-historic period of our globe. What about the origin of the juice—of wine itself? Pictet attributes it to the Semites and Aryans, and as these peoples migrated, they made known the process in the countries where they settled down, notably in Egypt, India and Europe. Thus the vine and wine possess very ancient title-deeds.—*Gardeners' Chronicle.*

LIVE-FOR-EVERS.—A correspondent sends the following from, he says, "a high class religious serial," that uses it as an illustration of the resurrection,—and desires the name of the bulb, if known.

Among the pyramids of Egypt, Professor Lindsay, the great English traveler, once found a mummy that had lain there for two thousand years. In one hand tightly clenched was what appeared to be the bulb of a flower.

The scientist took it, planted and watered it, and watched it with intense interest. Soon a tiny green shoot appeared. Under watchful care it grew and grew and finally one day a strange and beautiful blossom opened its petals to the light of day."

It is now well understood that sleight-of-hand tricks are not confined to our people. The Arabs are adepts in the art. In helping to unfold the article, they know what the observer would like to see. "Professor Lindsay" could just as well have found a coin of Queen Victoria in the mummy's hand clenched as a bulb if there had been an equitable consideration.

APPLE SAYINGS.—"Apple sayings," says a correspondent of the *Canadian Horticulturist*, are frequent, both in our country and in England, all of which testify in favor of the fruit.

"An apple a day
Sends the doctor away.

Apple in the morning,
Doctor's warning.

Roast apple at night,
Starved the doctor outright.

Eat an apple going to bed,
Knock the doctor on the head.'

A little less aggressive is one of the Midlands:

'Three each day, seven days a week,
Ruddy apple, ruddy cheek.'

More interesting than these is an old orchard verse, which used to be recited on certain ancient farms on the plucking of the first ripe apples of the crop. Misfortune was supposed to follow its omission, and its utterance was quite a little ceremony, the first apple, over which it was spoken, being presented to a young girl, who halved and bit it before any further fruit was gathered, or at least tasted. Thus it ran:

'The fruit of Eve receive and cleave,
And taste the flesh therein;
A wholesome food, for man 'tis good
That once for man was sin.
And since 'tis sweet, why pluck and eat,
The Lord will have it so;
For that which Eve did grieve, believe
Hath wrought its all of woe—
Eat the apple!'"

GENERAL NOTES.

LONGEVITY OF THE PECAN-NUT TREE. — A correspondent of the Texas *Farm and Ranch*, says that a tree, in the southern part of the State, was six feet in diameter. It was killed by a stroke of lightning and found, by its annual rings, to be about 600 years old. The tree would thus be thirty-six inches from centre to circumference,—and the growths forming the annual circle must have been very fine and closely set, or the diameter should have been greater. There is a probability of error in counting the rings, and the tree is not as old as believed to be.

IMPROVING GETTYSBURG BATTLEFIELD.—A correspondent of the *Country Gentleman* notes that the famous battle-ground of Gettysburg is being "improved" by planting. The original forest, in which a part of the fierce struggle occurred, was cut away to afford a panorama of the monuments. It is now thought better to have some portions wooded as it was on those great days. Strange to say, foreign trees are being used. Japanese Gingkos and English Oak are among them. The Silver Maple and Cottonwood, of which Gettysburg was never found guilty of supporting, is also an element in this reforestation. State Forester Rothrock could certainly have had no hand in this wretched business.

INSECTS AS HUMAN FOOD. — Prof. Riley showed that our Prairie Locust made a delicious dish when fried,—and he always contended that there were numerous insects that were just as wholesome as oysters. In New Zealand, a large grub, or, as Americans say, a "worm," found in dead timber, the larva is of *Prionopolis reticularis*, and is as eagerly sought for as we seek for mushrooms. They call the worm Huhu.

MAPLEWOOD LODGE, HARTFORD.—The beautiful residence and grounds, known as Maplewood Lodge, near Hartford, Connecticut, have been donated, by its generous owner, Dr. Russell, to one of that city's public institutions for the care of the sick. Flowers for hospitals have proved among the most grateful restoratives. Health requires mental administration as well as corporal. One may well say, if a few flowers are so beneficial to the sick, what a noble benefaction this generous gift of a whole garden must be.

SHAW'S GARDEN AT ST. LOUIS.—Professor Trelease says :—"It may possibly interest you to know, for the benefit of your readers, that plant agents have been operating in Indiana, —at least, as representing a firm located at Shaw's Garden, St. Louis, Mo. One such party is said to have given the name of G. A. Sawley & Company. If you care to protect your readers who may be subject to similar misrepresentations, kindly announce that 'Shaw's Garden,' as the Missouri Botanical Garden is popularly called, is not a commercial establishment, does not sell plants or have agents on the road, and knows nothing of persons making representations similar to those that are here referred to."

[Well established nurseries, as well as our friend's institution, are continually used in this way ; but it has been found impossible to prevent it, as long as persons can be found to buy of strangers, and depend on what strangers say. It may be regarded as certain that no reader of MEEHANS' MONTHLY would buy of a stranger representing himself as a representative of Shaw's Garden. It is only the ignorant, who seldom read anything, that are imposed on.]

HAIRY VETCH.—Circular No. 6, Division of Agrostology. U. S. Department of Agriculture, says that the Hairy Vetch, or Sand Vetch, *Vicia villosa*, is much superior to the ordinary Vetch, *Vicia sativa*, for comparatively dry soils or dry seasons. It has been in use for agricultural purposes about fifty years in the North of Europe. It is a native of Western Asia.

EQUISETUM ARVENSE.

CORN HORSETAIL.

NATURAL ORDER, EQUISETACEÆ.

EQUISETUM ARVENSE, Linnæus.—Sterile stems with simple, ascending, three or four-angled branches; sheaths of the fertile stems remote. Fertile stems appearing first, six to nine inches high, with an ovoid-oblong, brownish spike, about two inches in length; sheaths large, loose, with long, acute teeth, dark purplish-brown, whitish at base. Sterile stems nine to fifteen inches high, with a verticil of slender, articulated branches from the base of the sheaths; branches four to eight inches long, scabrous, green, each branch with its own sheath at base, and sheathed in each articulation. Darlington's *Flora Cestrica*. See also Gray's *Manual of the Botany of the Northern United States*. Chapman's *Flora of the Southern United States*, Wood's *Class-Book of Botany*, and Britton and Brown's *Flora of the Northern States and Canada*.

The pretty picture of the Corn Horsetail represents a plant that may fairly be termed a citizen of the world. At least, it is credited to three of the four quarters of the globe, and will probably be recorded yet from Northern Africa. Indeed, it may be looked for wherever the average yearly temperature is not high. On the American continent, it occurs under melting ice in the Arctics, and from the Atlantic to the Pacific as far south as Virginia and Central California. It has a great history in the past as well as in the present,—forms being found in a fossil state, that, if not the same, can be distinguished only with difficulty. The whole family can pride itself on its antiquity. The fossil genus, *Calamites*, which enters largely into some coal formations, is so nearly allied to *Equisetum* that some botanists are loath to admit any valid distinction. In human history, it also finds a place, being referred to by ancient Greek and Roman writers. The name *Equisetum* is, indeed, the ancient one, under which it has been continued down to the present time. Pliny, the well-known author of a work on Natural History, a great work for the time, refers to it as the *Equisetis*, or Horse-hair Plant; and Sibthorp, in his *Flora Græca*, identifies with some little doubt this and the allied species, *Equisetum sylvaticum*, as the *Hippuris* of Dioscorides the Greek author,—a term of similar signification,—making it, however, horse-tail instead of horse-hair as Pliny gives it.

In connection with this subject of ancient names, it may here be noted, that in the past ages plants were in a great measure classified by their general resemblances. What we should now regard as very different species were brought together in those days. In this case, what we now know as Mares' tail, *Hippuris vulgaris*, was brought in with *Equisetum*. In the days of the ancients, where there were several species supposed to be allied, the stronger species would be termed the male, and the more delicate the female. Our *Hippuris*, being finer in habit than the rest of the supposed family, was known as the "female horse-tail." It remained under this style, when Wm. Hudson, in his *Flora Anglica*, issued in 1762, reading it as female-horse tail, thought to render it more elegantly as "Mare's tail;" and, when *Hippuris* came to be divided from *Equisetum*, the equivocal name has been continued as the common name for that genus. History is injured by these changes in names. Even the common name of *Equisetum arvense* has been altered, by modern authors, without reason. It has been known, through many generations of English-speaking people, as the "Corn Horsetail." But Dr. Gray calls it "Common Horsetail,"—Darlington, Britton and Brown, and some others "Field Horsetail," translating the specific name—a fashion of giving an uncommon name as the common one not one to be wisely followed. In the literature of the Old World, the term corn stands for wheat,—and the plant has a fondness for growing in wheat fields, hence the common name.

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COLOR PLATE

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aids in his great trip across the continent. In one place, he says, "the road in the afternoon was over the upper prairies, several miles from the river, and we encamped at sunset on one of its small tributaries, where an abundance of *prêle* (*Equisetum*) afforded fine forage for our horses." This was on June 22nd, on the Otoe-fork of the Little Blue River. Again, on July 15th, then on the Platte in view of Pike's Peak, he remarks, "We halted at noon under the shade of some fine Cottonwoods, our animals luxuriating on rushes (*Equisetum hyemale*) which, along this river, were remarkably abundant." The former was probably our plant. Emory, in his report, notes that the Scouring Rush was a powerful diuretic on their horses,—this was referring to the species growing on the bottom lands of the Arkansas, and could scarcely be intended for the present species. This one is, however, reputed to give cows diarrhœa in the Old World, and it is said they avoid eating it except when hungry. On the whole, it is perhaps more ornamental than useful. In this respect, Pursh, in the diary of his travels to the Great Lakes, speaks of its beauty, as seen by him on June the 2nd, on the sandy banks around the Delaware Water Gap.

As in flowering plants, so in these lower orders, there is a tendency to vary, and some of the special forms have had varietal names. Some have even gone so far as to believe that our present forms are mere wanderings from those of the fossil age. Mr. Douglas H. Campbell notes, in the "Botanical Gazette" for 1891, "*Equisetæ* are degenerate forms which have lingered after their larger and better organized kindred have disappeared, and it is difficult to judge what are primitive and what are secondary characters." But if the present forms were about contemporaneous with the larger ones, the degeneracy must have become a fixed habit ages ago. Another variation is to produce tubers on the rhizomes. Mr. Theodore Holm says, in the *Botanical Gazette* for 1893, "tubers of *Equisetum* are short runners reduced to a single internode, situated on the rhizome, and make plants like bulblets—are found in *E. limosum* and *E. Talmateja*. Tubers of *E. sylvaticum* are ovoid and arranged so as to form a rosary." Conditions favoring these variations must be rare. The author of this paper has never found one on a rhizome or seen one. There were none to be found among the mass of plants dug to procure the specimen illustrated. Most authors describe the species as having the laterals rarely branching. All the members of the lower verticil are compound, as were all but very weak ones in the same mass. The most striking variation, however, will be noted by comparing the picture with the cut in Britton and Brown's "Illustrated Flora." The rhizome is there depicted as smooth as Couch-grass; in ours it is seen to be covered by coarse, scaly hair. At times, fructification will be borne on the barren branches,—but this is a condition common to most of the vascular cryptogams. A singular variation is noted, by Lucien M. Underwood, in the "Botanical Gazette" for 1895. The stem of a fertile branch was flattened, and twisted like a cork-screw.

In regard to the production of the female and barren stems, it will be noted, from our picture, that it is a matter of precedence. The terminal bud advances first,—later, a lower bud advances, which is also fertile. The barren shoot appears still later from another bud lower down.

Equisetums have long been of interest to microscopists,—and critical papers on their structure and behavior are still popular. The morphological relationship to other families of plants has not yet been made clear. There is little to bring them into alliance with ferns,—and attempts to place them near *Coniferæ* have proved wide of the mark. In such close company with Cycads during the fossil eras, they may be found nearer them than to some others that have been proposed. The behavior of the spores is very interesting. The spores are shaken from the catkin on moistened glass, and the thread-like elaters, which surround the spores, spread out suddenly, and almost simulate filaments with anthers at the apex. Mr. F. C. Newcomb, in the "Botanical Gazette" for 1888, suggests that the function of these elaters is to push the spores out of the spore cases, so as to aid in the distribution of the spores.

EXPLANATION OF THE PLATE.—1. Rhizome from a plant taken from a railroad embankment in Eastern Pennsylvania; showing the earliest spring fertile spike. 2. A later form of a lower bud, and 3 a much later one producing a barren frond. 4 and 5. The peltate scale, magnified, showing the spore cases beneath. 6 and 7. Magnified spores, showing the spreading elaters in front and sideviews.

WILD FLOWERS AND NATURE.

SPRING IS COMING.

Winter is a weary time!
Not the ripple of a rhyme
Stirs the icy shores along,
Quickening quietude with song.
Similes are choked with snow,
Not a metaphor will flow;
Envious frost doth hold in fee
Every lip in Castaly.

But let spring the bonds unbind
With the soft touch of its wind.
What a rapture! What a weep!
What a swift ecstatic leap!
Mortal words but half express
All the rapture, all the stress!
Sweeter are the strains that come
If the lip awhile be dumb.

CLINTON SCOLLARD.

EQUISETUM ARVENSE.—In addition to what is said of *Equisetum arvense* in the main chapter, it may be noted that of tales connected with our plant, there are but few. The Rev'd. Hilderic Friend relates that an old grave-digger decided when bodies had thoroughly decayed by the appearance of this plant in the earth above it. They never appeared, he said, in other cases, and were a sure sign of final decay. This was usually about six years after interment,—and Mr. Friend suggests that it may be the *Môly* of Homer, which has never been identified, but around which similar fancies hang.

In our days, all the genus are known as "horsetails." The French word *prêle*, used by Fremont in the extracts quoted, means simply "horsetail," as applied to all of the family. But many species do not branch, but grow up as a simple, reed-like stem, sometimes reaching ten or fifteen feet high and an inch thick. In early times the plants of this section were known as "Shave Grasses." Old Gerarde, writing in 1636, says of these naked forms that they were known as "Shave Grasses, wherewith Fletchers and Combemakers do rub and polish their worke, riseth out of the ground like the first shoots of Asparagus, jointed or kneed by certain distances like the precedent, (the true horsetails), but altogether without such bristly leaves, yet exceeding rough and cutting." The species that may be termed the type of the "Shave-Grasses," is the one known as *Equisetum hyemale*. Green, a popular author of the early part of the past century, sums up the account of it in this manner:—"This is the best species for polishing wood and metal, being the hardest and roughest, originating the name of Shave-Grass. It is much used by the whitesmiths and cabinetmakers, under the name of *Dutch Rushes*. The Northumberland milkmaids scour their pails with it." This roughness arises from the abundant formation of silex crystals, which make these stems feel like sand paper. Of *Equisetum arvense*, the same author says:—"It is a troublesome weed, and difficult to extirpate, is reputed noxious to cattle, especially cows, which it afflicts with a diarrhœa; but they are not very ready to meddle with it. The country people call it *horse-pipe* and *snake-pipe*. It is supposed to indicate subterranean flowing water or springs."

In regard to the movement of the spores, Mr. Willard N. Clute observes, in the *Fern Bulletin* for 1899, "It does not seem to be generally known that the curious antics may be observed with the naked eye, but if one will shake upon the back of his hand a quantity of the spores from the cone-like spikes, just at the right time in their growth, he will suddenly see the sage-green mass appear to boil, becoming at the same time fluffy and lighter in color, due to the opening elaters."

BACTERIA.—In many Boards of Health in our cities there seems a strange misconception as to the nature of bacteria. There are bacteriologists employed,—men who are able to detect these minute organisms, and perhaps to name a few or many of them,—but they have no knowledge of the relations these little plants bear to the public health. Recently, one of these large cities provided for public

filters, with the proviso that the filtered water should show less than 95 per cent. of bacterial colonies.

The fact is that there are two classes of these organisms, 95 per cent. probably being beneficial and 5 per cent. injurious. The atmosphere we breathe, and the soil in which plants grow, contain millions in a very small space. It has been estimated that in the earth enough to fill a hen's egg full will have 70 or 80 millions of them. River water is pretty safe. No malignant species has been known to live more than five days in river water. The good bacteria have such an overwhelming force, that they eat the others up. A bad bacterium will live several weeks when isolated from its enemies. A curious circumstance is, that the bad fellows shun oxygen,—while our friends rejoice in it. It is this fact that renders river water safest,—that it is pretty well supplied with this life-giving gas, during its downward flow to the sea. If it were possible to remove all bacteria, good and bad, from water, it would be absolutely pure,—but that is impossible. We take in numbers from the atmosphere, and with every mouthful we drink. All that cities could be expected to do would be to remove from the water all organic substances on which bacteria feed. If the citizens get water as clear as it comes from the springs, municipalities fulfil their whole duty,—and a corps of bacteriologists is a costly extravagance.

CHAPTALIA TOMENTOSA AND FLORIDA WILD FLOWERS.—I think some of the many readers and admirers of MEEHANS' MONTHLY, now sojourning in Florida, may be interested in a dainty little white, Fleabane-like flower now in bloom in this delightful country, although the weather is still too cool for the appearance of any of the three early Pinguiculas, so common here later, or even for the wee, energetic, white *Bartonia*. This early blossom, that is new to me, though I have botanized around here for several winters, is for many reasons most interesting, and well repays a careful search and study. It is called *Chaptalia tomentosa*, and it is the only species of the only North American genus of the "Suborder *Labiatiflorœ*" of the *Compositæ*, as given in Chapman's "Flora," in Gray's old "Systematic Botany," and in a dear old worm-eaten botanical book, in this St. Augustine Public Library, written by Stephen Elliott. This last writer, however, adds that there are many "other Genera of that order in South America." This attractive little herb is exceedingly odd when examined under a microscope, with its "bilabiate disk-flowers," its "caudate anthers," and its "involucral scales clothed with ferruginous tomentum;" and is also pretty growing out on the low pine barrens all around St. Augustine, its clusters of leaves pressed close to the ground, each leaf "bright green above and with white dense cottony tomentum underneath," and "retrorsely denticulate." Each little flower stands up erect on its wooly scape in the sunlight, but at night shuts its petals and droops its head tight against the scape, as if nodding in its sleep! The ray florets are from 16 to 20 in number, "white on the interior surface and purple outside," and the queer yellow disk-flowers with their cleft lips are sterile. I hope some one reading this may enjoy discovering it as much as I did.

Would any of your readers inform me where I can probably purchase—either new or second-hand—a copy of the above-mentioned "Sketch of the Botany of South Carolina and Georgia," by Stephen Elliott, and published in 1821 at Charleston, S. C., by J. R. Schenck? The book is in two large volumes, and though planned upon the quaint and obsolete Linnæan system, imparts a vast amount of information, in connection with Chapman, about this peculiarly *Southern* flora, that our splendid Britton and Brown's "Flora" does not pretend to give.

St. Augustine, Fla. MARY WORTH CHAPIN.

THE AUTUMN LEAVES OF NEW ENGLAND.—In California, we miss the gorgeous color of the autumn leaves of New England, especially those of the Sugar Maple and the River Maple, with their blended crimsonand gold, and the elm trees' yellow leaves, to which Longfellow doubtless alludes, in lines quoted in MEEHANS' MONTHLY for December. Two words only, "yellow leaves," turn back many a page in the volume of memory, to the days when their brilliant display was not associated with death and decay. Emphatic yet beautiful are the words "the golden bowl is broken, the silver cord is loosed," yet do we not know the sylvan water still continues to onward flow?

San Diego, California. MRS. E. E. ORCUTT.

GENERAL GARDENING.

THE GARDEN QUEEN.

Would Jove appoint some flower to reign
In matchless beauty o'er the plain,
The Rose (mankind will all agree),
The Rose the queen of flowers should be;
The pride of plants, the grace of bowers,
The blush of meads, the eye of flowers;
Its beauties charm the gods above;
Its fragrance is the breath of love.

Translation from SAPPHO.

PROTECTION FROM MICE.—"K.," Hartford, Conn., says:—"This fall, in November, we transplanted, from a pasture, about 8,000 large *Kalmia latifolia*, and as we feared that they might be injured by the winter weather if left unprotected, we covered them up with leaves, out of sight. Is it probable that mice will get in among the leaves and do harm? If so, what means can be adopted to prevent their destructiveness?

Kalmia latifolia is described in a list of poisonous plants issued by the Department of Agriculture, and I also understand, on good authority, that no rodents are likely to injure it. However, I have seen other ericaceous plants, which were protected by leaves in the winter, gnawed off at the ground and chewed up into small bits, especially Callunas and Ericas. Poisoned grain distributed among the plants and leaves has been suggested, but such a course has some very objectionable features, so I do not like to resort to it."

[In cases like these, all one can do is to adapt some of the many contrivances for catching mice to the peculiar conditions. A gardener, once troubled with mice in his vegetable garden, reported that he caught them easily by inverting a flower pot on a piece of slate, and burying it nearly level with the ground at the place where the mice were troublesome. The mice went through the hole for a piece of toasted cheese, but could not get out again, and were then carried in the trap to water and drowned. A vessel of glass would be still better, as one could see at once whether the creature had been captured.

As to the poisonous character of the Kalmia, Rhododendron, and allied plants, the writer has never met with any fact that corroborated it. The Rhododendron that Xerxes wrote about, as being so poisonous, was the Oleander, which we know is poisonous,—but half-educated writers confound the ancient Rhododendron with the Rhododendron of to-day and its allies. It is simply an illustration of call a bad dog a mad dog and you may hang him.

It is said, and believed in by even those who write of the *Kalmia* as being poisonous, that the flesh of birds that feed on the leaves of the plant has poisoned those who have eaten the flesh, without noting the inconsistency, that the birds were not poisoned by their winter's food. But an error, that has stood its ground for two thousand years, cannot be abolished by a paragraph in MEEHANS' MONTHLY.]

VITALITY OF PLANTS.—An exchange says:—"A seedless apple should be superior to its seedy progenitor. It is well known that it takes a large amount of vitality to mature fruit seeds, and seedless varieties should be less exhausting on the trees and more productive, while at the same time being of better quality."

It so happens that it is a lack of vital power that often induces sterility,—and a tree already too weak to mature perfect seeds, will not change its constitutional character to any great extent by their absence.

The fallacy of our contemporary's statement may be easily proven by the following means:

Take a few apples and examine their outline carefully, holding each directly before the eye and in position as it hung on the tree. It will be found that some are deficient of flesh on one side, taking the core as an axis. If such an apple be "halved" and quartered, the deficient portion will be found seedless or containing simply black specks like the undeveloped banana seeds; and if this same portion be eaten and compared with the portions con-

taining perfect seeds, a difference in quality, favoring the latter, may usually be detected.

It would seem by this that an apple entirely seedless would in all probability have all the flesh imperfectly developed and of inferior quality as in the case of the portions described.

WILD SCENERY IN THE GARDEN.—The annexed illustration represents a piece of natural scenery on the extensive grounds of one of our subscribers, Mrs. Alice O'Day, of "Elfin Dale," near Springfield, Mo. A winding brook

SCENE IN "ELFIN DALE," NEAR SPRINGFIELD, MO.

courses through the meadows, now round a clump of trees, now a slightly elevated mound with its meadow-loving flowers, all setting well off the gardenesque portions of the grounds. Contrasts of this kind add much to the success of garden art.

BELVOIR.—Having occasion to be on North Broadway, Yonkers, a few weeks ago, and having an hour or so to spare, I thought I could not spend the time any better than taking a run through that fine old place by the name of Belvoir, better known as the Lillian-thal Estate. Meeting the gardener near one of the entrance gates, I asked permission to look through the place, which was very courteously granted by his showing me through, himself. Starting for the greenhouses, of which the first was the Chrysanthemum house, I must say it was a show of plants and flowers I have not seen anything to equal for a long time. Among the varieties most noticeable were Col. D. Appleton and Modesto in splendid form, Iora and Vivian Morel, Mrs. Constable and Mad. Carnot in white, and a great many other varieties too numerous to mention. I counted upwards of fifty different varieties, and, for flower and foliage, it would be very hard to beat them. I have seen larger flowers, but seldom with the same body and finish to them. One thing I took particular notice of was, that there were three and four and sometimes five flowers to the one stem. Both plants and flowers bespoke the best of credit for the masterly way in which they had been handled. The next house was the Palm House, filled almost to overflowing with a very nice collection of palms, ferns, crotons and other foliage plants, all in fine condition. The next was filled with roses, and a very nice, healthy stock they were. Violets and carnations were in the pink of condition. Leaving the greenhouses, we walked through the grounds, which I must say are well kept, indeed; but the most striking feature is the view from the house. Looking up the Hudson River, you can see miles upon miles,—almost as far as the eye can reach,—of Hudson River Valley. That view far surpasses anything I have ever seen. There is also a farm, but not being posted on farming or stock, I shall omit going into detail on that subject, and conclude this with one more remark, which is that the gardener and superintendent, John Gillespie, certainly deserves great praise for the way he keeps the place in shape, as well as everything in connection with it. M. J.

A VEGETABLE MARTYR.—Annexed is an illustration of what the *Lyon Horticole* calls one of the Japanese Martyrs in the vegetable kingdom. Japanese dwarf trees are trained to

THE AFRICAN SCRUB PLANT DWARFED.

be what they are by so many cruel processes, that our contemporary feels justified by dignifying them in this way. The plant itself is a palm from Northern Africa, *Chamærops humilis*,—and closely related to the Scrub-Palmetto of the Southern United States, *Chamærops serrulata*. It has been subjected to Japanese treatment. It was simply grown in a small pot for many years, until the mass of coiled roots was formed and set on the surface. The plant has struggled on, in a contented sort of way, as the dwarfest specimen of a naturally dwarf species.

ASPIDISTRA LURIDA.—I was interested in your last edition of MEEHANS' MONTHLY, in the little article on the old-fashioned plant *Aspidistra lurida*. I have, in my charge, a collection of plants owned by Mr. Geo. Brown, of Newark. About fifteen are the green-leaved *Aspidistra lurida* and six are the variegated variety. Out of that number, I have only one plant in flower, bearing nine flowers. This is a poor, pot-bound plant in a five-inch pot. It is a singular little flower, not very handsome and rather of a curiosity. I think it is somewhat of a free-flowering plant, but the flower is apt to be overlooked, as you say. The flower appears just above the surface of the soil, and is of an earthy tint.

South Orange, N. J. JOHN ARMSBY.

I have a half dozen pots of this plant, which I have grown for eight or ten years, and have frequently observed the flower of late years, but not on the plants when they were younger. They are not very vigorous growers, and I have thought that perhaps they blossomed more often for this reason. They are, however, perfectly healthy.

Buffalo, N. Y. MRS. J. G. MUNRO.

Professor Austin C. Apgar, of New Jersey State Normal School, at Trenton, also adds:—"It is asked, 'has anyone tested it for outdoor culture in America?' I left a plant in the ground, on the south side of my house, in a rather sheltered position, a few years ago. It remained green through the winter and was in a healthy condition in the spring. I do not remember how severe the winter was."

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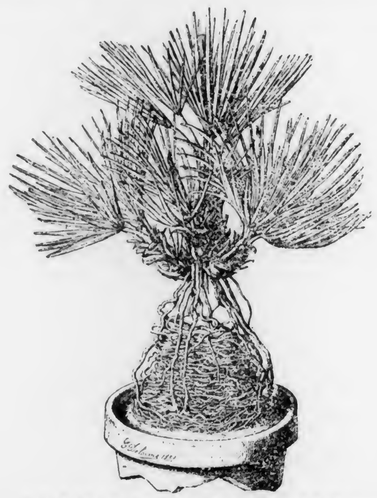

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INTENTIONAL SECOND EXPOSURE

Many new roses have been raised in this way, by propagating from a sportive branch,— and, indeed, fruit growers know that a bearing branch, grafted on a young tree, continues to be fruitful, though the branches of the original may retain its useful luxuriance. In nurseries, it often happens that the fruiting or flowering branches of plants have a marked difference, in their foliage and habit, from younger forms. Many varieties of *Euonymus*, especially of the Japanese Burning Bush species, propagated in this way, are distinct enough to be regarded as separate species. The English Ivy is another illustration. The leaves of the flowering condition are entire, and in many ways different from those in the climbing state, and they show no disposition to send out rootlets and climb, as the younger branches do. When these flowering branches are cut off, and made to throw out roots of their own, they carry this shrubby or "tree" character with them. In this condition they make pretty room or conservatory ornaments and deserve to be more popular.

EMPIRICAL GARDENING. — A correspondent of the *Country Gentleman* notes that, in some parts of the country, garden quacks do a good business by boring holes into trees and placing insect powders, sulphur, and so on, into the trunks as "certain death to bugs and caterpillars." At fifty cents a tree, profitable returns are made. The wide-spread ignorance of matters appertaining to gardening is lamentable. The only comfort is that readers of papers like the *Country Gentleman*, MEEHANS' MONTHLY, and others that might be named, are not the sufferers by this costly ignorance.

DATE PALMS FROM CUTTINGS.—What appears to be an official paragraph is going the rounds of the newspaper press, that the government has introduced a carload of Date Palms from Northern Africa, to the Experiment grounds at Tucson, Arizona,—and that Prof. R. H. Forbes has the matter of their care in charge. It concludes with the startling announcement that "in about three years cuttings from these plants will be available for distribution throughout Arizona and the Pacific Coast."

Date Palms from cuttings will surely be the wonder of the world.

NEW OR RARE PLANTS.

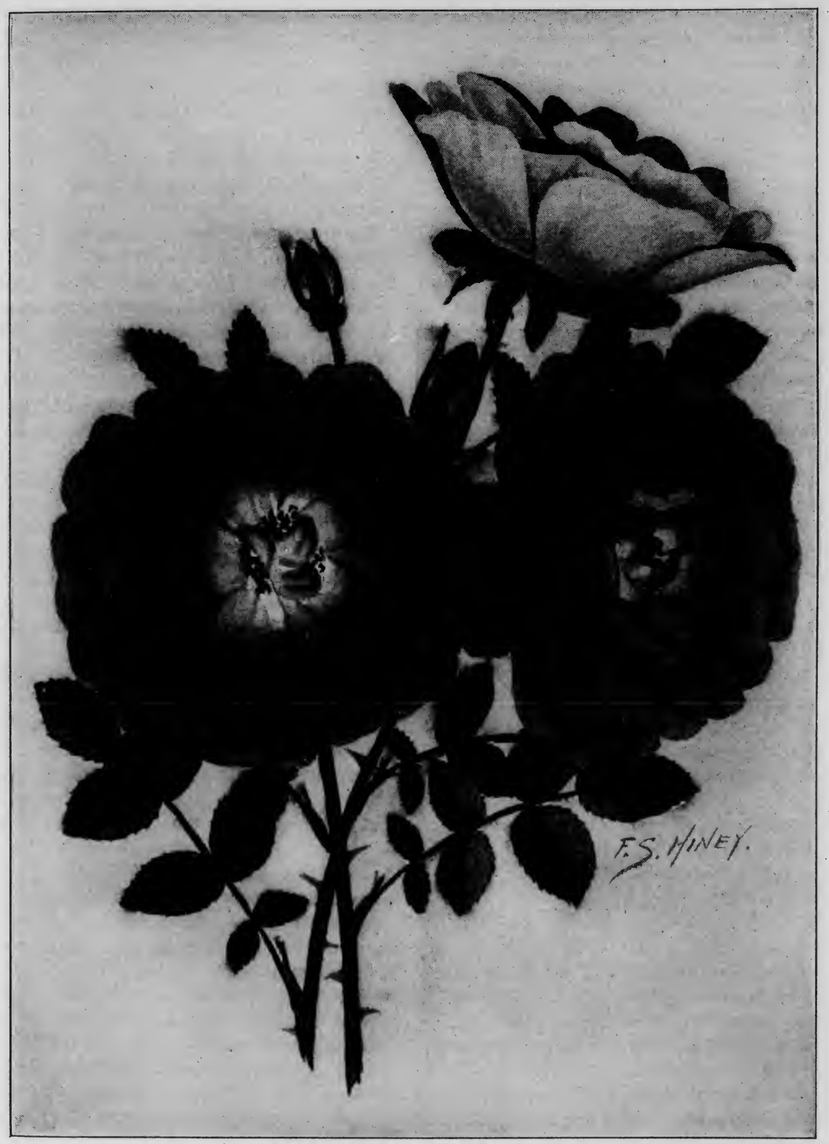
ROSE, RUBY QUEEN (see illustration on opposite page).—There is a grand field yet uncultivated for good climbing roses. The Noisette class, which is the parent of most of the best climbing roses of the Old World, is too tender for such a generous parentage, in most parts of the New World. The three Prairie Roses, Queen, Volunteer, and Baltimore Belle, seem as far as improvers have been able to go in that direction. The Red Boursoult and Belmont are very good as regards hardiness; but the flowering season being so very short, they have not become freely in use. The pollen in these two is barren. It has often been a thought that if improvers would take these in hand, with pollen from some other kind, a grand race of climbing roses might be introduced.

The tide seems to be turning in the direction of the Wichuraiana type. Amongst others the trial grounds of the *Rural New Yorker* have entered the field in this direction. With this is an illustration of the "Ruby Queen," one of the seedlings, the parent having been pollenized with a Bourbon rose, "Queen's Scarlet."

It has not, however, the everblooming character of the Bourbon class, but produces during early June a great profusion of clusters of bright, clear crimson flowers, quite double, about three inches across, and opening out flat and perfect. The red is rich and velvety, without a tinge of purple in any stage of development. The center is clear white, producing a pleasing contrast.

THE BOW-STRING HEMP.—The Bow-string Hemp, *Sansevieria Zeylanica*, though a native of India, has found itself so thoroughly at home, in Florida, that large quantities are grown and sold to Northern florists. It has been found an admirable house plant, and desirable in many ways for conservatories and general decorations. Its somewhat artificial look harmonizes well with many peculiar situations. The green leaves fleeced with white shadings always attract attention. Although flowering profusely in Florida, it is rarely seen in flower in conservatories.

At a recent meeting of the Chestnut Hill (Phila., Pa.) Horticultural Society, Mr. Frank Gould, gardener for John T. Morris, Esq., exhibited a fine specimen in bloom which is illustrated on page 44 to give an idea of its general character. So far as recollection serves, this is the first flowering specimen exhibited in this locality, and it created a great deal of interest in consequence. The flowers on the spike are white and small.



RUBY QUEEN ROSE --SEE PAGE 40.

THE ORCHIS FOX-GLOVE.—This is the common name under which the *Digitalis lanata* is known in European gardens. The flower is formed so as to much resemble some orchids. Instead of the somewhat regular margin of the flowers as seen in the ordinary fox-glove, the lower portion is prolonged into a peculiar lip-like appendage.

THE HARDY FLOWER GARDEN.

TREE ROSES.—The Tree Roses, or, as they are technically called in the Old World, Standard Roses, are not found to do well in our climate. In the Old World, old, strong - growing stems of the Dog Rose, *Rosa canina*, are gathered from the woods and sold to nurserymen at so much per hundred. These are cut back to about 4 or 5 feet high, and, when the young side shoots push out the next summer, two or three of the branchlets are budded with the kinds desired. In our country, the grafted heads are not able to draw up sap to supply the evaporation, and the Dog Rose stocks soon become hide bound, and the whole plant dwindles away in a short time. It seems that, with a little care, some of our hardy roses might be developed so as to bear good heads on their own stems. Annexed is a Crimson Rambler of two years' growth that seems self-supporting. With the lower branches trimmed, the head would become heavier. It might need a stake as a help for a year or two,—but would probably become a tree or standard, self-supporting plant in a short time.

CRIMSON RAMBLER ROSE, STANDARD.

AMARYLLIS HALLII.—The article on *Amaryllis Hallii*, by your correspondent A. P., of Rahway, N. J., in the December number of your magazine, was of much interest to me, for, having been in possession of that *Amaryllis* for seven years past, and never having discovered the slightest allusion to it, in any gardening magazine, it seemed as if my garden, and possibly that of the Manning Nursery, (from whence it came), might be having a rather selfish enjoyment of a very beautiful thing.

And it is an actual fact, that here,—within forty miles of Chicago,—a much colder place than Rahway, New Jersey, the *Amaryllis Hallii* has lived and bloomed out of doors for seven years—nor is it planted in the most sheltered part of the garden, either.

In the spring of '93, the bulb was set out in ordinary soil, in the long perennial bed, mixed in with hardy plants that have spread so rapidly that the bulb really struggles for position. A spreading white Spiræa is on the west side of it; a very low fence is south; the windmill derrick, covered with vines, is on the east side; but none of these give any especial protection. The bulb must be at least eight inches in the ground, and we heap a bushel of leaves on it each fall and cover with an empty box.

The first season the *Hallii* did not bloom, presumably because of the spring planting; but, every season since, it comes up in the orthodox way, dies down in August, and then surprises us with two or three stalks of the exquisite pink lilies, faintly clouded with pale blue, growing almost as did Jack's beanstalk.

With us, the winter of '98-'99 was very severe, the mercury, at one time, going to 26° below zero—and it was not above zero for a week. The May of '99 did not bring up the vigorous green blades of our *Hallii*—nor did it appear at all that season, and we gave it up for lost, and omitted the usual covering of leaves, having use for every leaf that could be found on the place;—most undeserved was our reward. The May of 1900 brought up such a bunch of green that I thought it a stray group of *Leucojum vernum*, and gave my attention to a garden almost oppressively crowded with bloom of all kinds. About the 10th of August, it was suggested to me that I go down to the derrick, and *there* were seven *Hallii* stalks, of various heights, with six lilies to each stalk. It was the most delightful episode of my gardening life. Three stalks were cut at once, and they brightened the library table for three weeks, each bud coming out in good color; and the other stalks did their duty, likewise, in the garden. The next question will be, why haven't we more *Hallii's*? I have the catalogues of the leading nurserymen—and it is only offered by one. In sending an order to Rea Brothers, in the fall of '99, it was included, at a venture, and a small bulb was received and planted in the bed especially prepared and reserved for our choicest bulbs. It made a weak growth this past summer, and it seems the *Amaryllis Hallii* requires time to become established. It is certainly a most charming subject for any garden to hold and any patient gardener to handle, and seems to have no especial cultural requirements.

Crownpoint, Ind. MRS. F. N. B.

FRUITS AND VEGETABLES.

PRUNE PEACH TREES AT TRANSPLANTING.—There is a very strong tendency prevalent among inexperienced planters to do very little pruning. Especially is this wrong in the case of the peach. The side branches should always be shortened in pretty close to the leader, the weak ones removed entirely and the stronger ones pruned at least two-thirds. Where this is not done, many branches and possibly a portion of the top will likely winter-kill in the fall; or in spring planting the summer growth will be weak and more or less unsatisfactory. From a pruned tree, the new growth will be clean, strong and vigorous. The leader seldom needs pruning.

CANNED ASPARAGUS.—"The rapid development of the asparagus canning industry in this State," says the *California Fruit-Grower* "is one of the features of the trade. Bouldin Island asparagus, packed by the Hickmott Asparagus Canning Company, Inc., has become a staple article of commerce throughout the world, owing to its great tenderness and exquisite taste. No other asparagus, so far, has been found that equals it in the delicacy of its flavor. The output is increasing each year, owing to the enormous demand for the product. Canned asparagus is shipped from this State across the continent in train loads and to Europe by the thousands of cases. It is no exaggeration to say that asparagus thrives better and reaches a higher degree of perfection on Bouldin Island, Cal., and its immediate neighborhood, than in any other place in the world, and the canned article stands pre-eminently alone in its class.

The new can introduced this year by the company mentioned has met with a great success, it being entirely a solderless can, thus the use of acids in the manufacture of the product is avoided."

DESIRABLE GARDEN PEACHES.—Those who only require a few fruit trees for a small garden are frequently confused by the long list of nursery varieties and their descriptions and are at a loss to know what will suit them. In many cases, where the known integrity of the nurseryman admits of confidence, it is as well simply to state that you want the best possible peach,—early, medium or late—white or yellow flesh or free-stone, as may be desired,—and leave the selection to him. Nevertheless, if the following be investigated they will be found first-class, standard, free-stone varieties:

EARLY.

Troth's Early (White).
Hale's Early (White).

MEDIUM.

Mountain Rose (White).
Crawford's Early Yellow.
Elberta (Yellow).
Oldmixon Free (White).

LATE.

Morris White.
Crawford's Late (Yellow).
Stump the World (White).
Smock (Yellow).
Salway (Yellow).

HOLLOW POTATOES.—H. F. S., Lancaster, Pa., says:—"One of our largest potatoes is the Purple Victor; but so many of the large tubers have a rotten core-like cavity, that it is a great drawback in the sale. We suppose it is caused by a fungus. Has it been studied by the fungus people, and any remedy found for it? It would be too bad to have such a fine cropper stricken from our list of profitable potatoes."

PLANT OF SANSEVIERIA ZEYLANICA.—SEE PAGE 40.

Injury and disease, through fungus agency, are far more common than practical men are disposed to admit,—at the same time, the modern tendency to attribute almost all disordered conditions to microscopic fungi, is the other extreme. There seems to be no record of any special study of hollow potatoes,—but the appearance does not indicate that these minute organisms have anything to do with the phenomena. A thin cuticle, similar to that which covers the exterior of the tuber, also lines the internal cavity. This would be produced by the normal action of the cells in either case. If minute fungi had a hand in the work, the normal cellular structure would be disorganized. If the condition of hollow-tubers has not yet been taken up, as seems to be the case, it is worthy of investigation.

THINNING THE FRUIT ON TREES. — The reason usually advanced for thinning the fruit on trees where it is abundant is that the remaining fruit may be benefited, the size and quality of it increased by the added vigor or reduced drain on the vitality of the tree. But there is another and stronger reason, namely: that the tree may not be weakened by the heavy fruit-bearing, which is invariably a drain, and may make healthy, vigorous growth for the production of a good crop the following year. The fact of devitalization of the tree in producing a great quantity of fruit can be better understood by comparing two trees of the same kind, one producing fruit and the other not,—the writer has seen Silver Maples that were excellent illustrations,—they must, of course, be under similar, favorable conditions, and the one not fruiting will be found to be making stronger growth, and larger, healthier foliage in great luxuriance. It simply illustrates that the one is weakened by the seed-bearing effort; and in the case of such trees as the peach and plum, the more fruit is allowed to remain on the trees the greater degree of weakness, and the trees will be less fitted for a good crop the next year.

The thinning of peach and plum fruit takes place in the early stages before the pit or "stone" is hard. A given distance between each fruit is decided upon, and this may be anywhere from five to ten inches on each branch, according to the general location of the fruit. Of course, those with blemishes are always removed, the whole being done by hand.

Modern methods of fruit-growing encourage a low, spreading growth, enabling fruit-picking to be done or any needed attention given from the ground or by aid of a small ladder.

THE LAWRENCE PEAR.—A friend placed on the table of the conductors, as a Thanksgiving offering, a fine specimen of a Lawrence Pear from his little garden. He remarked that he regarded it as one of the finest and best of the winter pears. The specimen did full justice to his good opinion.

FRUIT AND VEGETABLE GROWING.—As the Latin races of the more southern part of our continent are being brought closer to our doors in many peculiar ways, many of our capitalists will have to change their investments in order to meet the altered condition of things. The fruit and vegetable interests of Florida and California will especially have to change, and the capital have to be turned into lines that will not be so strongly in competition with more southern localities. For a while these long established industries may be sustained by legislative measures, but it seems scarcely possible that this can be continued indefinitely, and the more cautious capitalist will be looking ahead.

THINNING LEAVES OF FRUIT-BEARING PLANTS.—Those with little experience in garden culture believe that it is the sun that ripens fruit, and to aid in this, thin out the leaves to let in the sunlight. This is frequently seen in the management of the tomato and in the grape. Sunlight does usually add to the sweetness and general good character of the fruit; but ripening is a vital process, in which an abundance of good, healthy foliage is the prominent agent in the work. In short, a bunch of grapes, ripening in comparative darkness, would be far preferable to one grown in the full light with most of the vine leaves taken off. But the leaves themselves must be vigorous and healthy. They are not healthy when crowded. For this reason, the good gardener thins out the weak branches in the early stage, so as to have plenty of room for the development of larger ones later on.

BIOGRAPHY AND LITERATURE.

THE APPOINTED TASK.

No man is born into the world, whose work
Is not born with him,—there is always work,
And tools to work withal, for those who will,—
And blest are the horny hands of toil !
The busy world shoves angrily aside
The man who stands with arms akimbo set,
Until occasion tells him what to do,—
And he who waits to have his task marked out
Shall die and leave his errand unfulfilled.

LOWELL.

FOUNDING A FREE LIBRARY.—Mrs. E. B. Crane tells the Minnesota State Horticultural Society how the Austin Free Library was founded :

"When the city was in its infancy, with less than forty families, one of our minister's wives conceived the idea of beautifying the town and educating its few ladies in the pleasure of floriculture. She sent for a quantity of potted plants and distributed them among the ladies, to be cared for until the autumn; then they gathered together, and a floricultural fair and sale was held. This fair was one of several held by the ladies, the result of which is now our Austin circulating library. Not alone was the library the fruit of this beautiful work. It instituted in the hearts and lives of those ladies the love of flowers. It lightened the lonely lives of the pioneers and helped to make their privations more endurable, and to-day you can scarcely find a home where these influences reached but the inmates refer with pleasure to those early times, and the many blessings resulting from the refining influence of this early lesson in floriculture."

HOUGH'S AMERICAN WOODS. — Part VIII, issued by Dr. Hough, Lowville, New York. Popular and useful as this work of Dr. Hough is, it has not the national appreciation that it deserves. Had it originated in some other country, a "cross," a "garter," or some "insignia" of a "chevalier," would have been the recognition bestowed on the originator. The wood is cut into thin plates like delicate visiting cards,—indeed, to make visiting cards of wood is one of the branches of this industry. Longitudinal, transverse, and other sections are prepared, showing the character of the grain from every point of view. They are in light frames like photographs, and can be easily examined. Some of these sections make beautiful pictures. Sometimes they seem to exhibit mountain scenery,—at others one may imagine they are examining a prairie with sky overhead,—or the broad ocean fringed by a beautiful shore. A great depth of pleasant fancy follows the cursory examination. But the great practical value is the knowledge the worker in wood can gain from a study of the various species. Very handsome results can be had in wood-working not now thought of, as the result of Dr. Hough's labors. Wherever a knowledge of our wood as wood is important, to say nothing of value in botanical science, "Hough's American Woods" should have a place.

During the American Centennial, Japan exhibited something of the same kind, and common was the remark that such fine work could not be brought out elsewhere than in that country. But Dr. Hough undertook the task, and has far exceeded the Japanese in the fineness and beauty of the work.

The present issue covers the woods of the Pacific Coast.

CATALOGUE OF THE HAY ROSARY, ON THE SEINE, NEAR PARIS, FRANCE. — The Hay Rosary is possibly the most remarkable collection of any kind of flower in the world ; and is a grand tribute to the queen of flowers. The botanical department contains all the species and varieties obtainable from all parts of the world,—according to the classification of M. Crepin, the Belgian botanist; while every known variety that has figured in the florists' catalogues is also under cultivation. They are grown, not for commercial purposes, but for floral pleasure and botanical instruction. MEEHANS' MONTHLY is indebted to Mons. Jules Graveroux, 4 Avenue de Villars, Paris, for the copy of this beautifully illustrated and instructive work of 112 pages.

A YEAR BOOK OF KENTUCKY WOODS AND FIELDS, by Ingram Crockett; published by Charles Wells, Moulton, Buffalo. The "Year Book" is a collection of twelve essays, forming a volume of 112 pages, illustrated by views of Kentucky's natural scenery. The various incidents of nature as they occur in each month are dwelt on with poetic fervor. Plants, birds, living creatures of all kinds, as well as the rocks and hills of old Kentucky, some as texts and metaphors as they appear of the kaleidoscope, the author arranges for the observer. Those who see tongues in brooks, sermons in stones, and good in everything, will enjoy the work.

"FARMERS' GUIDE." As its title indicates, this is a guide to farmers in the cultivation and fertilization of all crops typical to America. This book is profusely illustrated, and every farmer will appreciate a copy in his possession. It can be had without charge from the German Kali Works of No. 93 Nassau Street, New York City, N. Y.

HANDBOOK OF INJURIOUS INSECTS AND PLANT DISEASES.—A pamphlet issued by the Bowker Chemical Company, Boston, Mass., intended to describe their goods, incidentally proves valuable to all persons interested in the care and cultivation of trees and plants, whether for shade, ornament or fruiting, and of vegetables. Its instructiveness covers the proper manner of spraying, descriptions and illustrations of infections with remedies, and a graded spraying calendar all in condensed, comprehensive form.

GOETHE AS A BOTANIST.—The article in our January issue under this caption, requires the following corrections :—

Page 14 first column, second line from top, 1878 should read 1778.

Page 14 first column, fourth line from top, Dessan should read Dessau.

Page 14 second column, eighteenth line from top, Zena should read Jena.

Page 14 second column, tenth line below, again Zena should read Jena.

GENERAL NOTES.

THE USES OF SPANISH MOSS IN THE SOUTHERN STATES.—Besides the thousands of pounds of Spanish Moss sent annually from Florida and other southern States to northern upholsterers, the plant has various other uses. One of these, a use that has recently been discovered, is that of a strainer and purifier of cane syrup. It has been found that a finer syrup can be made by straining the cane juice through moss than through any other material, and its use in sugar mills for this purpose is becoming quite general.

Another new use of the moss is for the blanching of celery. The bunch is wrapped from the ground toward the tops of the leaves, these being allowed to project beyond the wrapper. Then, when the leaves in growing begin to shade the ground, an additional wrapper is put on, and in this way each plant receives three or four successive wrappings. This is a cheap and effective means of blanching. The moss is clean and cool and does not cut off the ventilation, affording also the necessary shade for blanching.

Winter Park, Florida. THOMAS R. BAKER.

FIRE-PROOF WOOD.—In answer to an article under heading of General Notes, in the January Number of the MONTHLY, in reference to Incombustible Wood, I herewith send a small piece of wood, which was given away as a sample at the last yearly reception of the Franklin Institute, of which I am a life member, and take great interest in all new things shown at the meetings, etc. This sample has been treated by a fireproofing process,—that is, the liquor is forced through the wood under a very great hydraulic pressure, which renders the wood almost incombustible, which you can try by cutting off a thin slice the size of a match and holding it in a light.

The Plant of the United States Fireproof Wood is at 2220 Race Street, Philadelphia.

I am not interested in the above company in any shape or form, but simply send this sample in a friendly spirit. This process is patented ; the U. S. Patent is No. 620,114.

The Race Street plant has a capacity of 15,000,000 feet of boards per annum. The boards can be worked the same as other boards, —that is, painted, varnished and glued, the

only difference is that the boards get from five to nine per cent. heavier, depending on the variety of wood.

The speaker said, at the time, that they could fireproof white holly logs, part of one of which was shown, and which was about between 12 or 15 inches in diameter, the wood of which is very close grained, in a very short time. In some of the softer varieties of wood, a log, ten feet long, the liquor was forced through in about six minutes, I think he said.

This sample is varnished on one side; it takes varnish well, also can be glued well. A description and picture of the plant appeared in the *Scientific American*, July 28, 1900; also pictures of fire tests on small buildings, built of fireproof and non-fireproof wood, to show the difference.

PHILIP NELL.

Philadelphia, Pa.

GOVERNMENT SEED DISTRIBUTION.—Under the pretense of fostering agriculture, the National and State Governments waste incredible sums of money from the tax-payers. Possibly the most outrageous of these expenditures is the seed distribution of the National Government. The excuse is that new and improved varieties may be widely extended. Our wide-awake seedsmen get novelties long before the Government officials get them. There is nothing in this plea. Of the hundreds of thousands of dollars that have been spent in this way in recent years, it would be difficult to name a single item in which they have been ahead of the trade. At any rate, if a government be justified in "improving" agriculture in this generous way, they would be still more justified in distributing "improved" breeds of fowl, swine, horses and cattle. If we must have free seeds, let there be government stock-raising farms, and free distribution of the breeds. As a factor in politics, the stock distribution would beat the seed-packages clean out of sight.

HYGIENIC FADS.—To read of the wonderful hygienic discoveries of modern times, it is a source of wonder to reflect that, in the ignorance of the past, all human beings have not long since perished from the earth. Continually, some startling "discovery" is brought to light. Among the most recent relates to mushroom growing. A wide-awake Scotchman, named William McRobbie, in the town of Leith, Scotland, was in the habit of using cellars under houses wherever the owners would rent them. A large number of cellars in Leith were being used in this way. The town Board of Health had McRobbie arrested for maintaining a nuisance prejudicial to public health. McRobbie resisted, and a law-suit was the result.

It has long been a belief among farmers that the ammoniacal gases, given off by stable manure, were beneficial rather than prejudicial to health. No disease could ever be traced to the manure heap in a farmer's barn-yard, however annoying it might be to cultivated city noses.

In this case, it was shown that the residents, in the dwelling portions of the houses over the cellars, were just as healthy as their neighbors. Besides, the medical inspector of the Board of Health of Edinburg was brought in to swear that he had never known a case of disease from the odor of stable manure. Considering that this opinion came from a great university city like Edinburg, it goes to show the difference between real knowledge and mere fads. It is not surprising to add that the mushroom grower gained his case.

INCURVED CHRYSANTHEMUMS. — There are fashions in flowers, as well as fashions in dress. The English papers tell us that it has been decided, by the leaders of floral taste, that the incurved Chrysanthemum has to go. Truly, there was no great beauty in flowers that simply showed the backs of their heads instead of their faces,—but novelties are generally welcome though uncouth they be.

ROSES IN FLORIDA.—A member of the staff of MEEHANS' MONTHLY, traveling in Florida, writes of roses at the Ormond House, at Ormond, Florida:—"The Bermudians claim that the exquisite shell roses that bloom so abundantly on their beautiful island cannot be grown in perfection elsewhere, but if they could walk through the fine rose garden at the Ormond, they would retract that statement, for finer roses cannot be found in all the boasted gardens of Bermuda. It is no easy matter to grow roses anything near to perfection in the light sandy soil of Eastern Florida."

ASARUM CANADENSE

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WILD GINGER.

NATURAL ORDER, ARISTOLOCHIACEÆ.

ASARUM CANADENSE.—**Stem assurgent, one to two inches long; leaves two to four inches long, and three to five inches wide; petiole four to six or eight inches in length. Flower large, often concealed under dead leaves, nodding in the fork of the petioles, on a peduncle one to one and-a half inches in length; calyx lobes lanceolate, acuminate, dark brownish-purple inside, often reflexed. Darlington's *Flora Cestrica*. See also Gray's *Manual of the Botany of the Northern United States*. Chapman's *Flora of the Southern United States*, Wood's *Class-Book of Botany*, and Britton and Brown's *Illustrated Flora of the Northern States and Canada*.**

The picture presents one of the prettiest of our illustrations, and yet few who look for beautiful wild flowers are acquainted with its loveliness. This is possibly on account of its early blooming, for, in the northern part of our territory, it is in flower in April, at a time when few are alert for wild-flower collecting, and

——at such a time as goes before the leaf,
When all the wood stands in a mist of green,
And nothing perfect seems,

as Tennyson would say,—or from the fact that it loves to grow under the cover of trees and bushes, and is often almost buried beneath the dry leaves. It is possibly this warm clothing, again protected by a layer of snow, that advances its flowering in the North, where it is generally in bloom early, otherwise it would seem strange to find it further south in May. In English gardens, where there is little winter, snow or other covering, it does not flower till summer, according to Mr. Robinson's "Hardy Flowers." Possibly it is overlooked, being one of that modest class requiring its prettiness to be searched for,—as this author says, "not worthy of a place except in botanical collections"—a verdict the reader, with the pretty picture before him, is not likely to agree with.

Its history is unusually interesting in connection with a near relative, *Asarum Europæum*, from which some botanists, indeed, are slow to concede the propriety of separating. The name *Asarum* is Greek. No one is sure now of its original derivation, and most authors cautiously tell us "the derivation is obscure." Dr. Darlington, however, who was an acute Greek scholar, adopts an ancient suggestion that it is "from *a*, privative,—and *seira*, a cord, being anciently rejected from garlands." But the pronunciation of the word—As-arum, and not A-sārum, is against the conjecture. The learned John Gerarde says that the ancient philosophers called the plant "Blood of Mars." The Latins seem to have, by *Baccharis*, understood our plant; so, between Greece and Rome, the earlier herbalists compromised the matter by combining both names into one, as *Asarabacca*, under which it is recognized by European pharmacists. Linnæus, however, followed his predecessors in continuing the name *Asarum*, by which the plant is still known to the common people of Greece, and transferring *Baccharis* to a genus of compositæ.

Our own species takes an early place in American botanical history, having been figured and described, by Jacob Cornutus, in his interesting work *Canadensis plantarum*, published in Paris, in 1635. Linnæus adopted his name, *Asarum Canadensis*, by which it is now designated. For a long time, Canada was considered its home, and Michaux notes in his "Flora," as something remarkable, his having seen it on the Santee River. The acute Clayton had, however, sent plants to Gronovius long before Michaux's time, and it appears in Gronovius' work, under Clayton's label, as *Asarum aquaticum, foliis rotundatus serratis non maculatis, calyce magne hirsuto*. This, of course, was before the method, adopted by Linnæus, of having but a single adjective with a noun, in a system of nomenclature.

Its common name, in America, is Wild Ginger, so called from the ginger-like flavor and general character of the roots. In this

COLOR PLATE

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Its common name, in America, is Wild Ginger, so called from the ginger-like flavor and general character of the roots. In this

respect, it seems widely different from its European ally, *Asarum Europæum*. Lindley simply says of the latter, "The scent of the roots, when bruised, is very peculiar, partaking of pepper and ginger. The powdered leaves are used to provoke sneezing; a few grains at a time may be safely taken, and they produce a considerable discharge of fluid from the nostrils. Roots purgative, emetic, and diuretic; it is called Cabaret, in France, because, as it is said, drunkards use it to produce vomiting." Rafinesque is more enthusiastic concerning our plant. He says "the whole plant, but particularly the root, has an agreeable, aromatic, bitterish taste, intermediate between ginger and *Aristolochia serpentaria*, but more pleasant, warm, and pungent. The smell is spicy and strong. It is aromatic, stimulant and diaphoretic, cordial, emenagogue, subtonic, errhine, but not properly emetic like the *A. Europæum*, although often mentioned as such. It is a grateful substitute of the *Serpentaria* in many cases. It is useful in cachexia, melancholy, palpitations, low fevers, convalescence, obstructions, and whooping cough. The doses must be small and oft-repeated, since it becomes nauseous in large doses. The best preparation is as a cordial made with tincture and syrup; the tincture is colored dark red by the resin. The dried leaves make a fine stimulating and cephalic snuff, when reduced to powder, which may be used in all disorders of the head and eyes. A grateful wine or beer may be made by an infusion of the whole plant in fermenting wine or beer."

In modern times, one of the most delightful of the branches of botany is that which deals with the relations the different species of plants bear to each other. In this line, morphology, in connection with physiology, bears an important part. There seems to be a general unity of plan throughout the world of vegetation. Taking leaf-blade as the unit, the various forms result from varying degrees of life-energy acting on the unit, and the direction in which this energy acts. Thus growth is either accelerated or arrested in different lines,—or the parts are combined one with another or left free. In some cases, parts or organs, usually present, are wholly arrested, or consolidated with others,—or they may be abnormally developed at the expense of their neighbors. Keeping in view the fact that all these changes are but modifications of original leaf-blade, and that they must follow each other in a regular line, successively, we can readily detect the missing links, and understand what should be there to form a perfect whole. With this knowledge, the natural system of Botany, as a system, becomes greatly simplified. It is the object of this system to bring together those that are related, and that system is regarded as nearly perfect which seems the most successful in presenting this fact to us. There are few plants that will help the student in these lines to better advantage than *Asarum Canadense*, the one here illustrated. Morphology and physiology, in the lines above indicated, had not been developed in the last generation as they have been to-day, and the ability to trace missing links were not as complete. Hence, scraps left after arranging other natural orders have been combined as *Aristolochiaceæ*, in which our plant figures. Because of its three petals and other ternary structures, it has been thought a relative of the great endogenous section in which the lily figures,—while some other eminent botanists would place them near *Euphorbiaceæ;* and others compare them with the family to which the *Elæagnus* belongs.

Bentham and Hooker would make them follow our Polygonums; Dr. Asa Gray, in his "Manual of Botany," has the order succeed the ashes; while Britton and Brown, in their "Illustrated Flora," arrange them near the nettle family. If, however, the student will take some members of the order *Berberidaceæ*, especially *Jeffersonia* and *Podophyllum*, and allow for the links that have been dropped in some lines, and absorbed in others, there will be no difficulty in deciding what their natural relationship should be.

Considering how indifferently conditioned the plant is for distributing itself by seeds, which can only have a chance to grow near their parent, the wide geographical area the plant covers is remarkable, for our species, in connection with others so closely related as to suggest a unity of origin, are found over the whole of the northern portions of the globe.

EXPLANATION OF THE PLATE.—1. Complete plant from Eastern Pennsylvania. 2. Longitudinal section showing the interior arrangements of the flower.

WILD FLOWERS AND NATURE.

THE MORNING STROLL.

We lingered in the woods of Aldornere,
Which, as we left them, gradual passed away,
Under the warmth and light of the April sun
And the cool flow of the fresh morning air,
That like a subtle and ethereal wine
Sent the pure blood all glowing through our veins.

HOWARD WORCESTER GILBERT.

THE TRUFFLE.—The Truffle is a member of the mushroom family that grows under ground, and for which the genus *Tuber* has been established. It is a greater delicacy than the ordinary mushroom, and brings high prices. The Truffle collector trains dogs to hunt them. The dogs scent where they are, and then the collector digs them up. A recent London newspaper says that pigs are also trained,—and their services save digging. This is the manner of proceeding:—The writer describes a hunting-ground near Carpentras, in the Department of the Vaucluse, France, as "a plantation of small but bushy Oak trees." This is how the hunting proceeds:—"The pig made for the plantation, selected a tree, and began digging. With her snout she quickly made a large hole, scattering earth and stones right and left. The farmer, who is intently watching the operation, stoops down quickly, gives the animal a tap on the snout, and puts a few acorns before her, then fishes out of the hole a potato-like bulb nearly the size of a hen's egg, deep purple in color, and covered with little warts; inside it is grey, veined with white like marbles. This, we were informed, was a good specimen of valuable black Truffle." Pigs are passionately fond of Truffles, and the acorns with which they are supplied are a "sop to Cerberus" to prevent them from eating their find.

DOUBLE RUE ANEMONE.—Being a reader of the MONTHLY, and taking an interest in some of the freaks found and reported by others, I send by mail, a specimen of what appears to be a sport of *Anemonella thalictroides*.

I have known and collected specimens of this plant, from time to time, for the past ten or twelve years.

It is confined to a limited space on an open bank, but as it has doubled so profusely it now lacks stamens, and as it cannot thus make seed, it relies entirely upon its tubers for multiplying, and of necessity it has not escaped its limited boundary.

As you can see it resembles the Rue Anemone very much, in the structure of its tubers and leaves.

The main difference is in the flowers, and this you will find to be a beautiful rosette of greenish petals and a profusion of pistils in the center.

If you can recognize it, I wish you would let me know what it is. WM. W. WILSON.

New Brunswick, N. J.

[Your interesting plant is but the common Rue Anemone, with all the stamens turned to petals.

This is a common feature in Ranunculaceous plants. In this family, the transition from leaves to bracts, bracts to sepals, sepals to petals, petals to nectaries, and nectaries to stamens, is so very close, that one set of organs is frequently found transformed to another. In the buttercup, Virgin's Bower, Wind-flower, and similar well known plants, there is often seen an increase of petals at the expense of the stamens, and wholly double buttercups and similar plants are frequent.

In the present case, the stamens have not only reverted to petals, but the petals themselves are little more than greenish bracts. They remind one of miniature green roses.

If pollen from some perfect flowers of the Rue Anemone were applied to the perfect pistils in these double flowers, a very interesting breed might result. Florists of an improving turn of mind take these freaks as sent by good luck]

VITALITY OF SEEDS. — Referring to Mr. Ouwerkerk's communication on the longevity

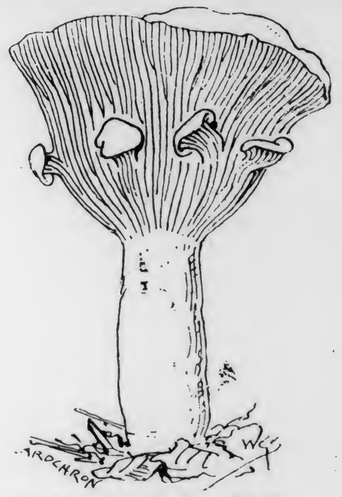
of seeds and the comments thereon in the February issue of the MONTHLY, I would call attention to some notes of mine on the longevity of seeds of *Martynia proboscidea*, printed some ten years ago. The substance of my notes was that a garden in my charge had been filled up several feet with soil from a neighbor's garden, which neighbor had been accustomed to growing this *Martynia* for the purpose of using the curious seed-pods for pickles. The plant had never been in my garden up to that time. In my notes referred to, I gave the number of years thereafter that this plant would show itself; it was a great many. Any extra deep digging, throwing the lower soil on top, would result in a plant or two of *Martynia* appearing. How long this would have continued, I do not know, but it ended by the garden being seeded down to grass.

JOSEPH MEEHAN.

A PROLIFEROUS MUSHROOM. — Mr. Worthington G. Smith sends, to the London *Gardeners' Chronicle*, the annexed drawing of a curious mushroom, with the following account thereof :—

"The accompanying illustration shows an example of *Agaricus albus* with five additional smaller caps produced from the gills ; the fifth cap is on the side of the fungus not illustrated, and is larger than the four drawn. It is remarkable that all the five additional caps grow on one plane near the middle of the gills, so that the head of the fungus with its additional growths is something like a 'Hen-and-chickens' Daisy. It is much easier to say what certain things are, than to explain their meaning, or to state what force brings abnormal growths about, especially in Cryptogams. Some abnormalities are frequent, others rare, and the present instance is probably very uncommon. The example was found in Highgate Wood, by Laurence Smith, a few days ago. The specimen is preserved in fluid in the British Museum (Nat. Hist.) At this institution there is a considerable collection of careful drawings of abnormal fungi, arranged in botanical sequence. They are well worthy of the attention of botanists, for a fact that cannot be explained by one example can sometimes be made out by the study of a series.

[It would seem, however, that the case may bear a little more explanation than Mr. Smith accords to it. Nature has no separate plan of operations,—though it is but recently that this has been conceded. It is not long since biologists had to admit that the lower and simpler vegetable organisms had separate sexes,—and so on with other points. Now, the mushroom is a plant, and is formed on the same general plan as an oak or a palm. It has stems, branches, flowers and fruits,—but so morphologically changed, that we scarcely recognize the fact. The spawn of the mushroom is the plant, the mushroom is the flower. Its stipe



A PROLIFEROUS MUSHROOM.

or stem is the analogue of the flower stem,—and the cap, with its organs, constitute the inflorescence. The spores represent the seeds, and we can trace the analogy through the ferns to the seeds of higher plants. We have, in the higher plants, cases of viviparity, bulblets or young plants being produced instead of ordinary seeds,—and this extends to prolificacy in ferns. There is no reason why there should not be a further modification of the same law in still lower plants,—and to say that, in this peculiar mushroom, the spores have become viviparous, would not be far wrong.]

WALNUT VARIATION.—Mr. Wm. E. Bradley, Philadelphia, writes :—"I send you, under separate cover, a specimen of what I believe to be a white walnut. About twenty-four years ago, the tree which bore this nut was sold to us as an English Walnut, and even now it is very much of the same appearance as this variety of Walnut. Of recent years, it has borne about two nuts each season, like the one I send you, although each spring it has an abundance of blossoms."

[Without the wide experience in plant variation which those have who are in daily contact with plant life, one might readily assume, as our correspondent does, that the specimen he sends is merely a Butternut,—or, as he adopts, white walnut,—rather than a true member of the English Walnut species. The nut shell is somewhat furrowed, as in the Butternut, instead of having the surface studded with minute swellings, as in the normal form of the English Walnut. The edges of the carpels or separate shells are also sharper, and the shell itself rather harder than is usual.

The specimen is especially interesting as showing how far natural variations may go.

The absence of fruit may arise from the catkins maturing before the female flowers appear, which occurs occasionally.]

GROWTH OF RYE IN ICE.—I offer a few lines of practical experience regarding an article, in the January issue, on page 12, "Growth of an old potato"—or, more fully stated, "any living vegetation will remain dormant under ice or in cold storage vault, etc., any length of time or an indefinite number of years without sprouting." Now I do not like to contradict these facts as stated, although I have had experience showing that vegetation will sprout under ice or cold storage. During the past six years I have had the filling of an ice house on a gentleman's place. This house is built over half in the ground, and filled every winter for the year's use, and, while packing the ice, rye straw is used to put around and on top, inside of house, during the season. As ice is taken out for use, the straw is moved about, and, while packing the ice, grains of rye would fall from the straw and down into the crevices between and under the solid blocks of ice. These grains of rye do really sprout and grow upward into the solid cakes of ice. I have found these young spears of rye to grow as long as three and four inches. The part that is astonishing to me is that these young and tender shoots can live and grow in the dark, cold ice-house. True, the atmospheric air reaches these as the door is opened and through the ventilator. The seed in sprouting does not seek to bend around solid ice, but directly up.

GEO. W. HESS.

Morristown, N. J.

[The interesting facts, noted by our correspondent, are in accord with the experience of many observers. It has long been a matter of record that we may place hyacinth or tulip bulbs in the ground, several inches deep, and they may be encased in frost the next day, remaining till spring. The leafy crown will be at the surface ready for the first fine day. The bulb-growth has thawed its way through the solidly-frozen ground. The evaporation from trees and shrubs during winter is very great. All this waste could not be supplied, but by the power of the rootlets to thaw and take in moisture from the frozen earth. The writer of this paragraph has found the *Sarcodes sanguinea*, or "snow plant," pushing up and blooming under snow, in the Sierra Nevadas,—and Kerner has recorded the same thing of gentians in the Swiss Alps.

On the other hand, it is just as true that, without the combination of a certain amount of heat, air, and moisture, certain plants and seeds will not sprout. The late Robert Douglas recorded that bundles of seedling trees of various species that had accidently remained in an ice-house a number of years, continued dormant all that long period, and grew just as well as if they had been but a few months in their cold quarters. The writer of this paragraph has placed on record the fact that, under the receding ice of the glaciers in Alaska, plants were springing up that must have been many years under the ice,—and his son, William E. Meehan, one of the Peary Relief Expedition, has recorded the same fact in regard to some species of willow in Greenland.]

DIVERGENCE OF BRANCHES.—One of the unsolved problems of plant-life is the law regulating the divergence of branches. In the White Pine and others, the lateral branches are horizontal ; in the Norway Spruce they are at an acute angle. But the law, in each species, is not uniform, for we have erect varieties, as in the Lombardy Poplar, and weeping or pendulous among those that are normally spreading—no one has explained it.

GENERAL GARDENING.

SPRING'S CALL.

Come hasten ye hither; our garden bowers
Are green with the promise of budding flowers—
  The crocus, the spring's first messenger,
  The fairy snowdrop, are blooming here;
The taper-leaved tulip is sprouting up,
The hyacinth speaks of its purple cup,
  The jonquil boasteth, 'Ere few weeks run,
  My golden sunlet I'll shew the sun';
Primroses, an Iris-hued multitude,
By kissing the winds are wooing and wooed.

DELTA.

RED SPIDER.—The *London Journal of Horticulture* has the following instructive paragraphs:—

"If W. D. and Mr. Wm. Taylor will try the following they will probably find it effectual in destroying Red Spider—the mite (*Tetranychus telarius*). Bisulphide of calcium made as follows:—Slake one pound of freshly burned lime, add half-pound flowers of sulphur and enough water to form a paste, then add one gallon of water, and boil fifteen minutes. It should be kept constantly stirred while it is boiling, then allowed to settle, and when cool have the clear liquid poured into a stone bottle, and kept well corked in a dark place. When required for use place a half pint of the liquor in each of the vaporisers employed—one to each 2,000 cubic feet—and fill up with water. Close the house, and place the lamps under the vaporisers. Repeat in the course of three or four days, and again at a similar interval. The worst of the sulphides is that of their discoloring paint, and of so acting on the skins of grapes as to harden them and prevent further swelling. For those reasons sulphur in any form is injurious to grapes when vaporised at over 170°.

One of the best ways of killing Red Spider by means of sulphur fumes is vaporising Mr. J. Simpson's mixture of sulphur—that is, flowers of sulphur formed into a cream with skim milk, placing a teaspoonful in a half pint of water at boiling, then in a small vaporing cup, and this in a larger filled with boiling water, after the manner of a glue pot. The lamp keeps the water in the kettle hot, and the sulphur mixture at 170°, so as to give off mild fumes or vapor—call it sulphurous acid if you like. The quantity suffices for about 2,000 cubic feet of air."

WEEDS IN PASTURE FIELDS.—Some weeds, especially the Scotch Thistle, are planted in gardens for the dear association of the fatherland. Its language is "Nemo me impune lacesset." "None shall safely provoke me." Canada Thistles are both pretty and fragrant. They were common in New England, but I've never seen one in California, nor a dandelion, a common wayside flower in the East, "smiling upon all," except as cultivated in the garden of some lover of home, the unforgotten home of long ago.

E. E. ORCUTT.

San Diego, California.

[It is remarkable that the dandelion has not yet found a home as a wild flower in California. It will doubtless reach there before long. In 1883, the writer saw it in some abundance around Ogden, in Utah.

It is further remarkable that, though the dandelion is so common everywhere in the East, no one ever heard it characterized as a vile weed, though weed it must be when it grows where the cultivator does not plant it. It may be that because it is freely eaten by cattle, it saves itself from the execration the farmer heaps on the oxeye daisy and buttercup, which, though taking full possession of the ground, cattle will not touch.]

APPLE TREES FOR BEAUTY OF FLOWERS.—Few flowers are greater favorites than those of the apple, and they often figure in decorations. Blossoms of the Red Astrachan and Transcendent Crab are particularly large and showy.

DEVELOPING ODOR IN FLOWERS.—Accounts from St. Louis inform us that an enthusiastic lover of flowers has succeeded in breeding an odoriferous race of tulips, and that he is now

engaged in experiments with the chrysanthemum, to which he expects eventually to impart the fragrance of the rose. We can only say, in reply to an inquiry, that nothing has come to hand throwing any light on these related successes and experiments. From a theoretical point of view, it seems impossible. Odor comes from the excretion of minute particles of oil. To change the odor, the character of the oil would have to be altered. When this can be done by the cultivator, we may expect turpentine from the sugar cane, and get the fragrance of the violet from Ailantus flowers.

AMERICAN FORESTRY.—As a people we have been criminally wasteful of the vast and splendid forests which Providence gave us.

But we are waking up. National and State forestry associations are arousing the people. Those States having natural timber are preserving it, and the prairie States are agitating the matter of creating parks and forests.

But it is so hard to "move" on national matters that a score of years may intervene before anything is done.

Every nation in Europe has its own forests under its own supervision. Austria has over two and a half million acres; the little Duchy of Baden, about a quarter of a million; Bavaria, two millions. Denmark has a large area, France has over two and a half million acres, Sweden, Norway and Prussia also come in. These governments plant and care for forests and make money at it.

Petitions are now in circulation for the U. S. Government to retain all the forest lands they have, and allow them to be cut only under their own supervision. At the same time these reserves can be used for parks.

The proposition is for the government to own all this property in the respective States. Though to keep the matter out of politics, the work should be done for the government by the park and forest association of each State.

Presenting a bill like this will arouse the people as nothing else will. The States will vie with each other in having plantations of their own. Towns and villages and individuals will be interested and the whole land will feel the thrill of the forward movement.

Let the National and State forestry associations appoint a meeting at the Pan-American Exposition and settle on some plan of action. Then let a bill be drawn up and two or three picked men push it through Congress. Let the horticulturists and foresters of the different States interest their congressmen.

C. S. HARRISON.

Pres. Neb. Park and Forest Association.

[The senior conductor of MEEHANS' MONTHLY has been a member of a legislative body for eighteen years, and believes that forestry in America cannot be successfully pursued under the lead of any public body,—City, State, or National. The membership of these bodies is continually changing, and what is done at one session is often completely upturned the next. In Pennsylvania, for instance, by rare chance, the right man in the right place as a Forestry Commissioner came about in the person of Prof. J. T. Rothrock. But the most strenuous efforts had once to be made to prevent his displacement,—the new rulers knowing little of his special fitness for the place.

America succeeds best when it makes it the interest of private parties to undertake great works. Other nations can do their own shipbuilding. America does better by private enterprise under contract.

It would not be difficult to get private companies to take hold of these great forest reservations,—and to undertake the establishing of new forests under favorable provisions for profitable returns.]

TRAINED ROSES IN FRANCE.—French rose-growers have a characteristic method of growing some of the climbing kinds. The plants are planted in the beds, and a frame-work of bamboo canes set behind them, so that the shoots are spread outward, almost fan-shaped. When the work is carefully done, very little of the frame is visible. To those who have space, this system of growing some of the lovely climbing kinds, especially the yellow and copper colored sorts, may be recommended.

VALUE OF SYSTEMATIC LABELLING.—A trip to Miss Helen Gould's country home at Irvington, N. Y., is well worth the while of every one interested in horticulture in its broadest sense, and the visit is made doubly enjoyable if it be under the guidance of the very able head-gardener and estate superintendent, Ferdinand Mangold. Here one finds business

system applied to everyday affairs, in such a way, that one unconsciously admires the executive ability of the man who manages all.

What most impressed the writer was the care with which all the stock on the place is labelled. The rare plants, of which Mr. Mangold has under his charge perhaps the finest private collection in this country, are properly and scientifically labelled ; and even the fruit, the shrubs and the garden plants are correctly and legibly named.

It looks like a well-conducted botanical garden. The advantage of all this is so apparent that it is easy to imagine the benefits to be derived from such a system. The under-gardeners have a far better chance to acquire knowledge. As an example, when showing his visitor through the magnificent range of glass, Mr. Mangold at random asked the different men in regard to the location of certain plants, giving only their full botanical names, and though the specimens inquired for were uncommon, the person called upon invariably showed the precise plant without a falter.

It was with very pleasant recollections, and a hope that the example set by this establishment will be followed by many others, that the writer left Mr. Mangold. C. W. K.

NEW OR RARE PLANTS.

VITIS INCISA.—Of this beautiful herbaceous member of the *Vitis* or *Cissus* family, Prof. Austin C. Apgar, Trenton, New Jersey, says : "Probably I ought to report my experience with *Cissus incisa*, Desv., of which L. H. Bailey writes in 'Cyclopædia of American Horticulture,' that it is found in Florida, Arkansas and Texas, and often planted in the extreme south. Sometimes called Marine Ivy? I received a plant from Texas and planted it on the south side of my house about eight years ago. The next year, when it came up, I divided it and placed one on the north side. This one died; but the one on the south side grew well, and the next year I again divided it and placed one on the north, which died during the winter. The plants in the sheltered position have stood all the late hard winters without trouble."

To this may be added that a plant brought from the Indian Territory, many years ago, by the senior conductor of MEEHANS' MONTHLY, has been quite at home on his grounds ever since. It is, however, growing in close contact with the stems of a mass of viburnum and other shrubs, that serve as friendly supports for its tendrils. The thick, shining leaves remind one of the well-known wax plant, *Hoya carnosa*, in texture. A plate is being prepared for some early issue of the magazine.

THE HARDY FLOWER GARDEN.

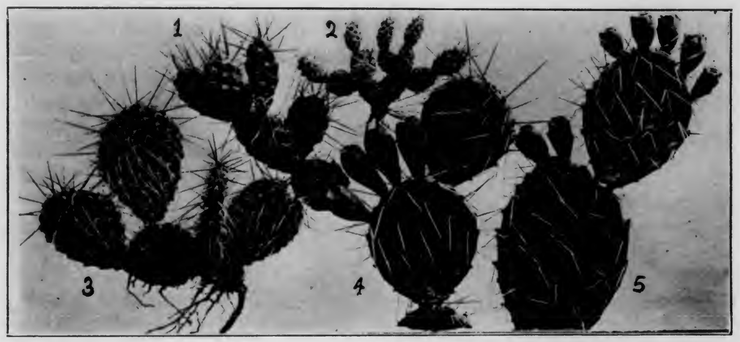
ROSES—BLACKBERRIES.—The best rose bush we can get is not a rose bush at all. Yet it has as handsome a flower as the rose, and belongs to the same family of plants. What we desire in a rose is a continuous bloomer and a hardy plant. We have many plants which are called hardy, and they are hardy under certain conditions, yet in most cases, in practical tests, they succumb to the winter's cold. The trouble comes in a continuous bloomer making continuous growth. The continuous blooming rose should be able to control its efforts and at the first frost in the fall harden up its growth to meet the conditions of ice and snow. If it does not harden up its growth and will keep up its growing ways, it will certainly be killed. Here, the cultivator's knowledge should come in to stop the fall growth of his rose bushes. Now, how can it be done? Run a spade down on one side of the plant and cut some of the side roots. This will check the growth and the bush will stop growing as if it was considering the matter, and whilst it is considering the matter, a frost will come along which will check it still more and then, maybe in November, when the ground freezes, a heavy mulch placed around the plants will save them. But as I said above, the best rose bush is not a rose bush. The best rose bush is a blackberry bush. Here, at this season, our blackberry bushes are snow white with bloom,—great big blossoms, and so many of them. These blossoms are filled with honey, and the honey bees are filling their honey-sacks with the pure nectar. Do rose bushes furnish honey to the bees? If they do, I never saw any of them around a rose. Then, when this wealth of bloom is past, which lasts fully three weeks, we see the green fruit forming, and the berry turning red; and last we pull from the plant large, luscious, grainey, black, berries, filled with juice,—berries nearly

two inches long by one inch in diameter. When the bloom falls from the rose bush, we have nothing but green leaves left. In most cases not even a hip. F. K. STEELE.

Festus, Mo.

HARDY CACTI.—The natural distribution of that remarkably interesting group of plants, the *Cactaceæ*, is in popular thought restricted to the arid, sub-tropical portions of America. There are, however, some notable exceptions which are of particular interest to horticulture, viz :—those species which are hardy enough to withstand the winters in the Northern States without protection. Among these may be mentioned the following :—

Cactus Missouriensis, *C. viviparus*, *Echinocereus viridiflorus*, *Echinocactus Simpsoni*, and



1 OPUNTIA ARENARIA. 2 OPUNTIA FRAGILIS. 3 OPUNTIA POLYACANTHA.
4 OPUNTIA MESACANTHA. 5 OPUNTIA PHÆACANTHA MAJOR.

variety *minor*, *Opuntia arenaria*, *O. arborescens*, *O. Camanchica*, *O. fragilis*, *O. mesacantha* (two or three varieties) *O. phæacantha major* and *O. polyacantha* (two or three varieties.)

A few more, equally hardy, are known to botanists, but do not seem to be offered by dealers. All the kinds mentioned above, except *O. arborescens*, are natives of Central Colorado, north of the 40th degree of latitude. The latitude of this region is upward of 5,000 feet above sea level and the winter temperature frequently reaches a minimum of twenty degrees below zero. Some of the sorts occur in the mountains at an altitude of 8,000 to 9,000 feet.

Although the rainfall of this region is much less than that of the Eastern States, this difference of climate has not interfered with their successful cultivation in the east, and they have proved no less successful in the excessively-humid climate of England. They seem to prefer a soil containing some humus, of rather coarse texture, in which the roots can easily penetrate to considerable depth. It should be well drained, having a sunny exposure, and if the position is elevated somewhat above the general level, so much the better. A soil too retentive of moisture is apt to cause rotting during winter. The Opuntias, owing to their rapid growth, indifference to drought and heat, their picturesque forms, handsome flowers and evergreen nature, will be found remarkably effective for places where other plants could only with difficulty be made to grow. The round or globular sorts should be used in groups, in association with the Opuntias, adding much to the variety of effect.

Other plants that may be used with the Hardy Cacti in imitating their natural surroundings are the *Yucca angustifolia*, *Artemisia frigida*, called Mountain Sage, a very handsome perennial with grayish, fine-cut foliage, *Artemisia gnaphaloides* or Silver Sage, *Rhus trilobata*, a handsome drought-resisting shrub, *Bigelovia*, *Calochortus*, etc. D. M. ANDREWS.

Boulder, Colorado.

FRUITS AND VEGETABLES.

CUTTING ASPARAGUS.—With those familiar with certain facts relating to the life of plants, the question of the propriety of cutting all or

certain asparagus shoots as rapidly as they appear, and for a continued time, often arises, for it is well known that the continued cutting away of all a plant's growth has a weakening tendency, at least. As recently stated in MEEHANS' MONTHLY, most gardeners cut all growth during the first half of the season. But a correspondent of the London *Gardening Illustrated* recommends leaving all the very light growth, that it may strengthen the plants for the following season, and only cutting that which is strong. He further suggests what would appear quite desirable, that from a batch of seedlings, it is best to select male plants, which uniformly are more vigorous. The female, or seed-bearing plants, are the weaker for producing seed. Conover's Colossal is recommended very highly, for although not producing as large and heavy stalks as some, they are more numerous.

GRAPES FOR NORTHERN LOCALITIES. — In the far northern sections of the United States and in Canada, where the summer seasons are short, many grapes do not mature fruit before cold weather sets in, therefore the earliest varieties only are satisfactory. Prof. Macoun, in the *Canadian Horticulturist*, names the following, among others, as suitable for such localities: Moore's Early, Merrimac, Wilder, Delaware, Brighton, Moore's Diamond, Worden and Lindley. Champion is the earliest of all, but of inferior quality.

A NEW VEGETABLE.—An Australian paper speaks highly of a new vegetable that is becoming popular in the colony, but gives no name or clue by which one may get at its identity. It says of it :—"A new vegetable, and one that promises to be a great acquisition, is the asparagus pea, introduced into Victoria by Lord Hopetoun. It is extremely prolific, and most people would pronounce it a delicious vegetable when properly prepared, combining, as it does, the pronounced flavor of asparagus with the delicate suggestion of the table pea. The method of culture is that of the ordinary pea.

The plant is of a prostrate nature, branching much like a rock melon, and spreading nearly two feet. Stem prostrate, leaves trifoliate, leaflets spatulate-ovate, an inch in length, two stipules ovate, flower axillary, and of a scarlet red and purple, giving the appearance of a field of red clover. Pod square, with fringe on each side, two inches to four inches long, containing six to ten small peas. The pod is cooked and eaten from the fingers, after the manner of asparagus."

WATER FOR VEGETABLES.—It is a good thing to remember that the major portion of most fruits, and many of what we term vegetables, is water, and that to have them properly develop, there must be no lack of this element. But it is not always wise to supply this artificially, as all soils are not fitted for it, and there is danger of soil-baking or an over-supply.

The best course to pursue to keep up the supply of moisture is first to save what nature supplies naturally, – conserve it, as we say technically. This is done by constant cultivation and, at times, largely by mulching. Soil that is constantly stirred on the surface by hoeing, harrowing or coarse raking, keeps cool, is quick to receive any moisture in the atmosphere, such as evening dews, and does not part with it so readily. Mulching of straw shades the soil from the direct rays of the sun, prevents rapid evaporation of the moisture and keeps the soil from baking. Cultivation also has a good effect by aeration of the soil, which is essential to plant life.

In some cases, it will be possible and desirable to apply water by means of a hose. The evening is the better time for this as it has opportunity to soak well into the soil before the sun's heat of the following day can take the most of it. If this be used in connection with a mulch, the danger of baking the surface of the soil and the necessity for frequent application will be greatly reduced.

The writer saw a small patch of turnips, near the roadside, last fall, which were of remarkably large size and solid. One that was weighed (not the largest) proved to be 4¼ pounds. This patch was so situated it received the rain washings from the road and was abundantly but not excessively supplied with moisture. The large specimen referred to was cooked and served to six persons at one meal, and proved more than enough, making a large dish in itself. The writer has frequently observed that radishes are very fond of water and quickly take what is supplied them. Further observation would doubtless show that all vegetables of this nature have a similar desire for water.

Where water is artificially supplied to vegetables that should make strong top growth, the addition of manure will be beneficial.

RASPBERRIES IN MASSACHUSETTS. — Some varieties of raspberry do not stand severe winters perfectly, even in comparatively moderate climates. In Massachusetts, according to a correspondent of the *Rural New Yorker*, the Cuthbert occasionally winter-kills badly, though at other times it is very satisfactory in all particulars. The Loudon seems perfectly hardy, but has a fault of overbearing, which appears to affect the fruit-producing wood of the same season, rendering the next year's crop poor. The remedy suggested is to prevent overbearing by closer pruning, which will encourage new wood growth.

A MAMMOTH LEMON.—While travelling through Florida, recently, along the southeast coast, the writer paid an interesting visit to Pitt's Island, a place of about five acres, at the head of Lake Worth. Mr. Pitt keeps a small boarding-house, and grows various fruits that are mostly calculated to interest his visitors.

Just as the writer was about to leave, he espied a basket full of some very large citrus fruit, which he took to be some variety of pomelo; but inquiry developed the fact that they were simply lemons of unusually large size. The tree that produced this fruit did so uniformly, and the specimen herewith illustrated can hardly be called abnormal. Of course the subject is much reduced in the illustration; but comparison with the lemon on the left,—which is really unusually large,—will give a fair idea of its size. It weighed just four pounds; the smaller one was less than one. The specimen obtained has since been cut, and found to have quite a thin "skin," contrary to expectations.

The larger of the other fruits in the picture is a lime; the smaller a kumquat, a member of the citrus family of which the skin is eaten as well as the pulp.

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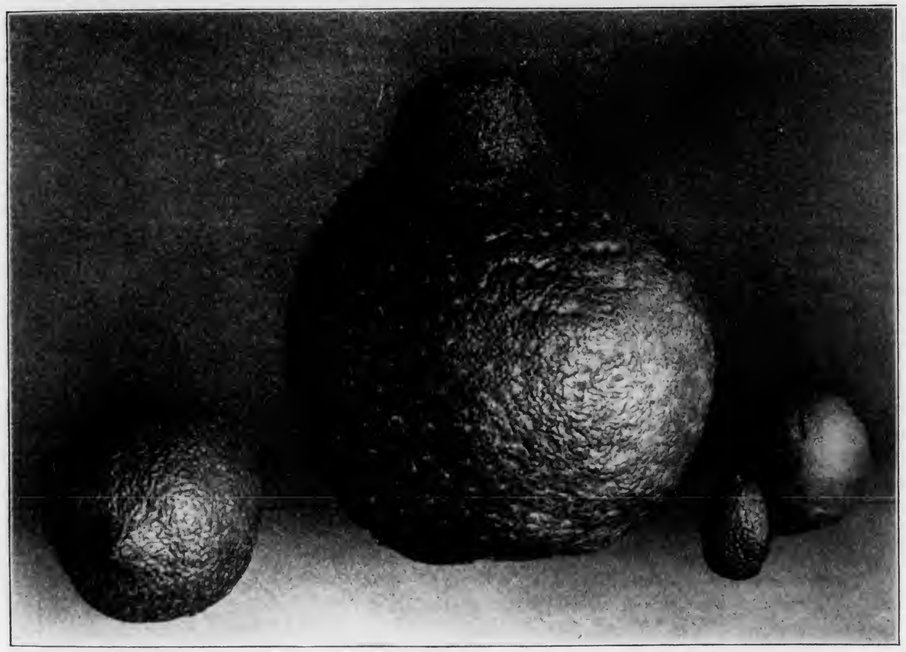

A MAMMOTH LEMON.

INTENTIONAL SECOND EXPOSURE

BIOGRAPHY AND LITERATURE.

THE HOPEFUL LESSON.

The hope, in dreams, of a happier hour,
That alights on misery's brow,
Springs out of the silvery almond flower
That blooms on a leafless bough.

THOMAS MOORE.

DR. PERRINE.—The Jacksonville *Times Union* says that the "'Perrine Grant,' on the East coast of Florida, was given to the Perrine family in recognition of the services of 'the famous botanist and experimentalist,'" who was the first to introduce tropical, commercial plants into the State, in the early thirties. He was killed by Seminole Indians in 1838.

THE PARK OF BELVEDERE, NEAR WEIMAR, AND ITS CONNECTION WITH GOETHE'S BOTANICAL STUDIES.—Whoever reads and studies the works of the world's great poets, no matter if ancient or modern, will soon notice the fact that all, with hardly any exceptions, are ardent lovers of free nature. The primeval forests, the rustling reed-grasses of the swamps, the virginal meadow, trespassed by the gentle flow of meandering rivulets, and the waving grainfields have inspired the bards of all nations. Longfellow, Bryant and Holmes are often charmed by the beauty of our landscape; and Tennyson's muse bears the stamp of quiet Lincolnshire, with its lanes through stretches of lawn and cultivated gardens and its lovely dells. But whoever loves free nature loves also flowers. Burns' "Lines to a Mountain Daisy" are a charming and touching expression of this love. Schiller, Heine and Lenau, are fascinated by the fragrance and gorgeous hues of the roses and lilies; and above all stand the Orientals, who, in the most picturesque way, give vent of their homage to their glorious native flora. While this unbounded admiration for the flowers is universal in poetry, and in its exertion has been of a vast educating influence, it is rather strange to find, among the world's great poets, so very few with any real strong and productive inclination to closer study of plant-life. We know of Rosseau reading botanical essays to a selected circle of enthusiasts in France, a century ago; and, just at the same time, Germany's greatest poet, Goethe, began his studies of botany. MEEHANS' MONTHLY, on pages 13 and 14, current volume, describes to us Johann Wolfgang von Goethe as botanist; and, in addition to this highly interesting article, I beg permission to give a brief description of the field of Goethe's study of plants.

As before mentioned, it was after the perusal of Linne's works that he became captive of, as he styled it, "the loveliest of all sciences." Being one heart and one soul with his noble friend and protector, Grand-duke Carl August of Saxe Weimar Eisenach, both started to make Belvedere, the lovely summer residence of the Court of Weimar, their sphere of activity. This place then boasted already of one of the largest "orangeries" of the European continent. The records in the State's archives, in Weimar, mention over 600 large citrus trees, mostly brought over the Alps from far-away Italy. As events had turned, now extensive green-house-building was commenced, and soon, from everywhere, collections of new plants poured in, partly purchased by Carl August, partly presented to Belvedere by befriended courts, while Goethe and the Grand-duke, by their frequent travels, heaped treasures upon treasures. The gardens and greenhouses were at their best then, and the grounds devoted to the culture of herbs, hardy perennials and annuals contained over 2,000 species. As fruit of Goethe's labors appeared, in 1790, his then famous work: "Metamorphosis of the Plant," which, although it has outlived itself now, will nevertheless be of lasting historical value; and, we may justly class it a markstone on the onward road of botanical science. Carl August died in 1828; and, four years later, the sublime Goethe, with his last faint exclamation: "More light!" on his lips, bade farewell to this world. It was impossible for the house of Weimar to maintain

Belvedere at a scale as it had been under Carl August's reign, especially as the place lays distant from the great highways of travel, and its extensive botanical collections had been kept merely for private study. Besides, the political horizon of Germany became darker every day; and while, under Carl August, the Grand-duchy of Weimar, with its university at Jena, had been a fortress of free thought, a peaceful oasis amid a broiling mass of oppressed people, and a thorn in the eyes of narrow-minded potentates, then the struggle began in earnest, and all Germany arose and broke forever the fetters of absolutism, and Weimar was alike stormswept. The dawn of the new era found Belvedere stripped of a considerable portion of its former splendor. At those trying times, Grand-duchess Maria Paulowna was the guardian of Belvedere, for which she always cherished a fond predilection.

From 1853 till last January, Grand-duke Carl Alexander, a true friend and protector of art and science, was ruler in Weimar, and to him the Germany of to-day owes the faithful preservation of those consecrated places, where her greatest heroes of thought and intellect lived and labored.

But now, kind reader, let us pay our visit to Goethe's laboratory as botanist and see how it has been handed down to us. We walk up "Belvedere Allee," a broad avenue, lined on both sides with old venerable linden and horse-chestnut trees. The beauty of the trees, planted in 1757, and the picturesque Ilm-valley absorb our thoughts; we hardly notice when the avenue turns into the park of Belvedere, and suddenly, coming out of the woods, we stand in front of the castle. After a swift glance over the main structure and the several additional buildings, all erected in the Italian renaissance, our eyes are captivated by the magnificent view down into the Ilm-valley and at the far-away Ettersberg mountain-ridges. Involuntarily, our sight becomes riveted to the City of Weimar; its castle, peeping out of an immense mass of trees, appears like a gem amid a sea of green. Turning to the opposite front of Belvedere, we behold a picture of repose and quietude. It shows a spacious, open lawn, dotted by a few splendid, solitary trees; and, in the distance, confined by the irregular lines of shrubbery and trees and as a special ornament, there is a handsome flower parterre. (See illustration above.) Our next visit is to the so-called "Russian Garden." In 1804, when the young heir to the crown, Carl Friederich, returned from St. Petersburg, with his beautiful consort Grand-duchess Maria Paulowna, the young princess missed the grounds of Peterhof, where Le Blond had copied

BELVEDERE CASTLE, NEAR WEIMAR.

Versailles, and where she had spent her youth. The chivalrous Carl August and his friend Goethe at once decided to have a small section of the park of Belvedere laid out in French style, similar to Peterhof, and thus originated the "Russian Garden." It was to be "a dwelling in green and made out of green," a bright, cheerful abode of most unique and thoughtful design. To maintain its strictly private character, thick hedges of *Ulmus campestre* enclosed the place; while irregular lines of tall shrubs further aided in keeping the eyes of strangers out. As the old parkguard opens the gate, we enter a spacious sexangular ground, ornamented by a number of carpet beds and two marble statues of Cupid. This is the reception-room, wherein Maria Paulowna received the "merry ones of Weimar," on bright summer days, at her garden festivals, so are we told. Walking up the main aisle, we pass a second gate, ascend a few steps, and have, on both sides, shady arbors running in rectangular lines all around the centrepart, which is divided by a walk in two equally large sections. The one to our right,—shady and devoted to play and outdoor sport,—"the Drawing room"; while at the left, "the Stateroom" contains a number of regular groups planted with roses and other fragrant flowers. The partition walls are also of *Ulmus campestre*. The middle walk terminates in an arched bower of latticework in which the marble statue of Thalia is placed. From here, a few steps lead down into the parquet of the "Natur-Theater." One realizes it is classic ground here, and, as we walk down in the centre, we are in full view of the verdant stage, where once, during hours given up entirely to frolic and merriment, both the nobilities of intellect and of birth were actors. Whatever the modern landscape architect may say about the absurdities of some creations of the rococco age, one fact is certain, the sanctum of Maria Paulowna at Belvedere, aside from its historical interest, is full of fascinating charms.

"NATUR-THEATER" AT BELVEDERE.

After a brief inspection of the nearby "labyrinth," we stroll through the southeastern part of the park. This section, originally a wooded hill, sloping down towards the "Possen-dell," was converted into a free, open landscape during the sixth and seventh decade of the last century, and, the names of the different Sckells, members of an old family of gardeners, are closely connected with it. At present, Armin Sckell is superintendent of the park; while Julius Sckell is in charge of the extensive greenhouses and the plant department. To the follower of landscape gardening, a walk through the park of Belvedere is highly instructive, and the rich collections of

trees and shrubs offer also a rare opportunity for dendrological studies.

The greenhouses are mostly old-fashioned buildings, except the tropical section, a modern iron-structure, containing the usual collections of palms, ferns, orchids and general stove plants,—among the latter, several rare and stately *Encephalartos*. Next to the tropical division stands the "Wintergarten," a conservatory of considerable dimensions. The arrangement of the interior is genial and imposing. During my connection with this place, I very often heard the visitors exclaim: "Oh, a fairy land!" Indeed, among our modern conservatories there is hardly anything that could rival the lovely scenery in the "Wintergarten" at Belvedere. As we walk along the meandering aisle, lined by a miniature lawn of *Selaginella*, we notice many acquaintances of long ago. There are *Acacia armata*, *A. brachybotrya*, *A. cultriformis* and *A. verticillata*; then all the many species of the order *Myrtaceæ*—not to forget the *Clethra arborea* and the old *Viburnum Tinus*. During February and March when, interposed by stately palms and Dracænas, all are in full blossom, the general effect is grand. Another prominent feature is the great rockery decorated by conifers and ferns. Ascending a narrow, winding stair of primitive rocks, we discover on top, amid Araucarias, cozy nooks and banks overclad with green, live moss, from where we may peep down over a rustic bower and watch the main walk. There is no doubt this conservatory was designed in which to linger and enjoy, amid green and blossoms, happy hours when the outside world is bound in rigid fetters of ice and snow.

It would bring us far beyond the limits of a single article would we dwell on details when passing through the semi-circular storage houses and adjoining doms, wherein the citrus, and tall Cupressus and Araucarias are overwintered. But one place we cannot omit to see—the herb and flower garden, where once the portly figure of Goethe bent down to study the secrets of plant-life, and thus became ours. Following a drive, we reach, in a short distance, the square for the orange trees (Orangen-Platz). Here nearly 200 old relics of the last two centuries are lined up in three avenues. Our illustration shows the main-avenue. Whoever may be so fortunate as to spend some years at Belvedere, will never forget those quiet summer evenings, when nature rests and the full-moon sends down the radiant silvery light, when the atmosphere is pregnant with the fragrant odor of orange-blossoms and the supreme peace only interrupted by the murmuring old fountain, or the rustling of the bright

MAIN-AVENUE ON ORANGE SQUARE AT BELVEDERE.

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INTENTIONAL SECOND EXPOSURE

leaves occasionally moved by a gentle breeze. The nightingale in the nearby shrubs begins the soft sweet song of love,—the rustling in the crowns of the trees becomes whisper ; and the talkative fountain chats of old times, and long past-away nights, when "the merry ones of Weimar" passed up and down these avenues ;—when the air was ringing with merry laughter of bright-eyed women, attired in the becoming gowns of the early part of the nineteenth century ; and the genial wit of those highly-cultured set held full sway. And at last it tells us of him—the sublime star among Germany's poets,—the giant among thinkers, —our landscape gardener and botanist, Wolfgang von Goethe. RICHARD ROTHE.

Laverock, Pa.

GENERAL NOTES.

THE TEA PLANT IN AUSTRALIA. — The Chinese tea plant thrives well in Australia. Trees planted by Baron Mueller, in the botanical garden, seed freely, and young plants are easily raised from them. The Australian papers say that the difficulty in making it profitable commercially is the cost of labor in collecting the leaves, but the native tribes might be taught to do useful work in this direction. The difficulty has been gotten over well in the United States, and tea growing has become profitable here.

NON-COMBUSTIBLE WOOD.—In the line of information presented in recent issues of MEEHANS' MONTHLY, it is stated in *Forest Leaves* that the bark on some of the *Sequoia* trees, in California, often two feet thick, is almost non-combustible.

STRENGTH AND VALUE OF JUNE BERRY WOOD.—Prof. J. T. Rothrock, Commissioner of Forestry to the State of Pennsylvania, says that *Amelanchier Canadensis*, June Berry or Shad Bush, must be ranked among the strongest of our native woods. The heart wood is a reddish-brown, the sap wood being whiter, heavy, strong, and because of its close grain polishes well. It is hard when dry, but liable to split while seasoning. The wood is serviceable for a number of things, and has been suggested as a substitute for boxwood in the hands of the engraver.

PROFITABLE FRUIT-GROWING.—After long experience in cultivating various fruits for market purposes, the fruit growers of Western New York believe that the apple orchard is the most permanently profitable of all. This naturally has to be taken in a general sense,—for there are conditions under which other classes of fruits will certainly out-do the apple in profitable returns. Profit, in any department of market gardening, depends more on the business ability that can take advantage of special conditions as they arise.

THE AGED ROSE TREE OF HILDESHEIM.—The London *Chronicle* says :—"Disquieting news has come to hand as to the health of a venerable botanical marvel—the rose tree which grows over the apsidal crypt of the dome at Hildesheim. Tradition asserts that it was planted by Ludwig the Pious, who founded the church about the middle of the ninth century. According to this legend it must be over a thousand years old. Latterly a growth of unwholesome white patches has spread over its limbs, and signs of decay are apparent. Herr Waldheim, however, the curator of the royal gardens at Hanover has been called in, and hopes to save its life."

If Herr Waldheim should fail, the church wardens might send to America for some nurseryman's boy, who, with a whitewash brush and Kerosene Emulsion, would soon clear the patches of white scale from the rose stems, at half the price Herr Waldheim's expert services cost.

SKUNK-CABBAGE FOR SWINE.—When I was a boy, nearly fifty years ago, our Irish neighbors used to collect the leaves of the Skunk-Cabbage in great quantities for a spring feed for pigs. It is well known that the root of this plant is actively medicinal. C. W. G.

[When the senior conductor of MEEHANS' MONTHLY was in Alaska, nearly twenty years ago, some young deer captured were fed on the Skunk-Cabbage of that region, *Lysichitum Camtschatcense*. The sailors attributed their death to this food.]

SPECIES OF PALMS.—The number of species known, in 1797, was 16 ; to-day they number 1,200 ! *La Semaine Horticole.*

CLARKIA ELEGANS

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ELEGANT CLARKIA.

NATURAL ORDER, ONAGRACEÆ.

CLARKIA ELEGANS, DOUGLAS.—Glabrous or pubescent, one-half to six feet high, simple or branched; leaves broadly ovate to linear, repandly toothed; petals entire, rhomboidal, the long, slender claw without teeth; anthers all perfect; filaments with a densely hairy scale at each side of the broader base; stigma lobes equal; capsule nearly sessile, six to nine lines long, obtusely four-angled, rather stout and often curved, somewhat villous. Brewer and Watson's *Botany of California.*

This chapter, with its illustration in this issue, is devoted to a beautiful denizen of the Pacific coast, that is confined to limits narrow as compared with other species of the family, and yet growing along the valleys and hill-sides in California from Mendocino County to Los Angeles and the foot-hills of the Sierra Nevada. Only one reference to it can, therefore, be given from any widely circulated botanical work. This is unlike the first discovered species, *Clarkia pulchella*, which was collected on the famous expedition across the continent under Captains Lewis and Clark; and, though not found actually in California, abounds in Washington Territory, Oregon, Idaho, and the northern portions of Colorado. Though familiar to the settlers, it has received no common name among the people. It is also among the commonest of the valued ornaments of the flower garden, where many of our popular common names have their birth. But even there it is simply known as Clarkia. In the absence of any other name in use, the name, with its adjective, has been translated,—but with little expectation that it will come into general adoption.

It is as well that this condition exists as aiding in the commemoration of one of the two great actors of a famous event in American history,—the first crossing of the continent by Captains Lewis and Clark, the latter of whom is the person honored in the name of this beautiful annual. This intrepid voyage has been characterized as one of the most remarkable of any age, or among any people. These two comparatively young leaders started out, in May 1804, to penetrate a vast wilderness, peopled only by what were supposed to be hostile savages, and over-run by wild beasts of unknown character. They had to make their peace with these wild people as they went along, and live on what the unknown land might afford. From 1804 to September 1806, they were as completely out of civilization as though frozen in at the North Pole. But they returned with the loss of one man only, at peace with all the Indian tribes, and with stores of knowledge that showed the nation the way to make the great western country its own. The expedition was planned by members of the American Philosophical Society of Philadelphia, in response to a suggestion by President Jefferson, who was also the many-year president of that institution. This was made in a letter in February, 1804, and the party started in May following, under the co-equal charge of Lewis and Clark, the former of whom was also a member of the Philosophical Society. Lewis had been an ensign under the then Lieut. Clark, and he agreed to go on the expedition only that Clark would consent to go with him. The first winter they passed among the Mandan Indians. On the 15th of November, 1805, they reached the mouth of the Columbia River, on the Pacific Ocean; then, returning, they arrived at the Mississippi in September, 1806.

Captain Wm. Clark was born in Caroline Co., Virginia, August 1st, 1770. When 14 years old, his parents removed to Louisville, Kentucky, residing on Mulberry Hill. He resigned as Lieut. in the army, in 1796, because of ill-health; but he rejoined in 1803, and, in 1804, was made Captain of Engineers. In 1813, President Madison appointed him Governor of the Missouri Territory. He died, in St. Louis, September 1, 1838. The funeral was the most impressive ever known in that city up to that time,—even the Sac Indians joining in mani-

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festations of sorrow, and expressions of regret for "Brother Red-Head," as he was affectionately known to them. This is a brief sketch of the man whom Frederick Pursh has honored in the genus *Clarkia*. The plants collected on the journey to the Pacific were lost. On their return, the plants collected by Lewis were turned over to the Philosophical Society and handed to Dr. Barton for examination. He was the patron of Pursh, paying for the expenses of his journeyings and of his general botanical work. The collection is owned, in part, by the Philosophical Society and, in part, by the Philadelphia Academy, the latter having been secured at a sale of Lambert's effects in London,—Lambert having aided Pursh in examining the collection.

The specimen, from which Pursh established the genus in the 11th vol. of the Transactions of the Linnæan Society of London, he states was found on Clark's River. This was *Clarkia pulchella*, already noted as since found over a wide expanse of territory. He gives a colored plate of this in his "Flora of North America."

Our species, *Clarkia elegans*, was discovered by David Douglas, who was sent out by the Royal Horticultural Society of London, chiefly to collect seeds of such rare plants and trees as would prove useful or ornamental in English gardens. In a letter to his English friends, dated November 23, 1831, he refers to his first meeting with it. The letter was written from Monterey. He says:—"I have discovered, among other things, a pretty species of *Clarkia*, though hardly equal (in beauty) to *Clarkia pulchella*. It grows from four to six feet high, and has entire petals." Lindley described and figured it, in the "Botanical Register" for 1833, under the name of *Clarkia elegans*, as suggested by Douglas. He further observes "The name of *Clarkia*, like the name rose, carries a charm with it that beautifies even a weed,—for it is impossible not to associate with it the idea of that sweet North American flower, that in a few short years has changed from an obscure botanical rarity to the ornament of every flower market from London and Paris to Moscow and Stockholm." He is referring to *Clarkia pulchella*, which was a botanical rarity from the time of its naming, by Pursh, in 1813, from herbarium specimens, till its introduction, by seeds, in 1826.

Outside of the comparison with its predecessor, *Clarkia elegans* is a very showy plant. Its favorite places of growth are along water courses or streams. When these dry, as they sometimes do in summer, the plants soon mature and die away. But, while they are at their best, it is doubtful whether its highly esteemed elder sister has more attractive charms. In a letter, Douglas noted that, at Santa Barbara, in July, "I found a blossom of *Clarkia elegans* with double petals and stamens and one pistil. Another one, in seed, had a double capsule,—anthers not noted." There is, in cultivation, a double form, that reproduces itself from seed,—but whether or not this was from the original find of Douglas has not been recorded.

It is not often in collections made in California. The author of this paper gathered it, in July, in the San Joaquin Valley, but not in very good condition. Mr. F. V. Coville, in his account of the Death Valley Expedition, records gathering it in most of the lower altitudes of the Sierra Nevadas,—and notes especially of its being seen on June 24, 1891, near Caliente, Kane Co.,—and, on June 29th, near Fort Tejon.

The student in structural botany, especially with a view to classification, will be interested to note how little difference appears, on close inspection, between the genus *Œnothera*—the Evening Primrose family—and the *Clarkia*. But the general character and appearance are so unlike the members of that family, that it seems a case where nature itself has made a genus without any aid from man. The deeply-lobed and clawed petals, and the fact that four of the eight anthers common to the plants of the order were barren, comprised the points chiefly relied on to establish the distinction. Our species has not the deeply-lobed petals that characterized the original species,—but the long-clawed character still carries the genus safely on.

The plant is usually of a much branching character. The picture represents a lateral only; but good diagrams of parts of the flowers have been given instead of a more copious reproduction of parts of the plant.

EXPLANATION OF THE PLATE.—1. Branchlet from a plant grown in the Bussey Institute, by Mr. Jackson Dawson. 2. Enlarged anther, showing the manner in which the cells open to expose the pollen. 3. A flower showing the four perfect anthers in the earlier stage of the expansion of the flower.

WILD FLOWERS AND NATURE.

SERMONS IN THE WOOD.

"Under my tent of this greenwood-beech,
To the simple sylvan people I preach,
And long my sermons have said or sung
In the mystic tones of an antique tongue
The woodman, only, can read or speak,—
A language older than Hebrew or Greek.

"Mysterious voices I hear from the green
And moss-grown boughs of ancient treen,
Where for the vanished a dryad moans;
And I find a theme in the runic stones,
And sweeter hymns in the greenwood brooks
Than any found in the printed books."

HOWARD WORCESTER GILBERT.

FORESTS INJURED BY THE "WALKING-STICK."—A very harmless-appearing insect, known as the "Walking-Stick," seems to be an enemy of the tree-culturist.

Mr. D. S. Hartline describes at length, in *Forest Leaves*, great destruction effected by these insects in the defoliation of the forest trees on the mountains and hilltops near Millville, Penna. They were found in great numbers on all kinds of trees and shrubs except hemlock, pine and dogwood. Witch Hazel, oaks, chestnuts and maples seemed to be special objects of attack.

Serious ravages by this insect are evidently rare and may not occur again in many years.

Many of our readers would doubtless recognize the Walking-Stick by sight if not by name. It is as slender as can be, generally about an inch long, and is dull brown in color, and altogether like a small piece of grass hay.

HABITS OF THE ROBIN.—Your interest in all matters pertaining to the doings of the denizens of the woods leads me to send you the following account of the queer actions of a female robin. Every morning, about daylight, and at irregular hours during the day, but more particularly in the morning, this female robin flies to the window sill, tips back her head, looks straight up, and then makes a flying leap up some three or four feet and pecks at the window glass, generally gives three knocks while poised in mid-air. This it continues for an hour or more, sometimes going out to the lawn for a worm and then returning to its queer actions. When driven away, it will return within three minutes. Where the inside shades are drawn down, if of light color, she does not bother that window; but if the shades are dark green, she will peck at the glass.

Only windows under a porch-cover are attacked. Even when all these are shaded with light shades, she does not bother other windows not shaded that have no porch covering over them. When all the windows under a porch were covered with light inside shades, leaving one small transom window un-shaded, she attacked that, but left windows, within five feet unshaded and not covered by porch, alone. She is not attacking her reflection, because the reflection would be near the window sill. Sometimes her mate sits on the porch railing, some ten feet away, watching her. If the window is left open, she leaves it and goes to another. Is she daft?

There are burglar alarms for robbers, but I know of no automatic safeguards against the attack of robins. W. C. EGAN.

Another correspondent says: "Regarding the supposed return of birds to their old locations, the paragraph in the MONTHLY would seem to indicate that the same pair returned. When birds choose their partners, does this marriage continue for life? Are there divorce courts in the bird kingdom, as well as in the kingdom of human beings? Are the sexes exactly equal,—and if not, how do the 'surplus females' or the confirmed 'old bachelor' birds get along? It seems the observation you made opens up many new chapters in the history of bird-life."

ABNORMAL GROWTH OF WOOD.—In my early life, I had a fond desire for nature and natural scenery. Whether in field or forest, I was a

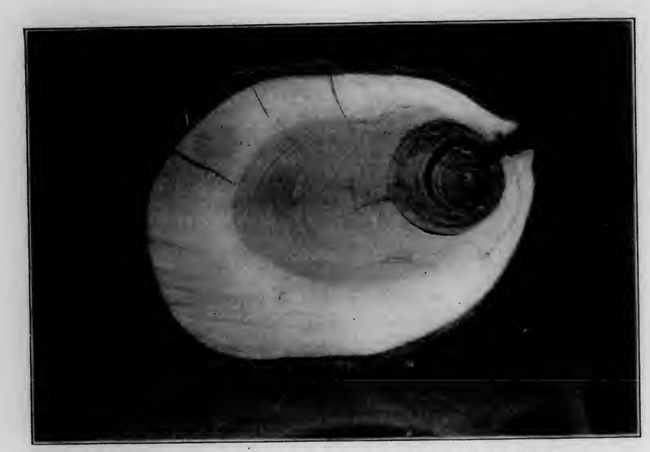
close observer of whatever lie in the field of my vision.

The study of plant-growth, and especially of the maple, has occupied much of my attention. I have experimented with the maple, in all its parts, with reference to sap, sugar, malate of lime, etc.

The study of pressure, suction and zero conditions of the tree is extremely fascinating.

In studying the tree so much, and so minutely, I can scarcely pick up a stick of wood without giving it a glance.

The rings, or signs of yearly growths, and the medullary rays especially, have received much attention, as I wished to learn the office of the rays.



SECTION OF WOOD SHOWING THE HEART TO ONE SIDE.
PHOTOGRAPH BY COOLEY, WATERBURY, VT.

In examining stumps, logs and blocks of wood, occasionally I found the pith (heart or center) on one side, and knowing there must be a cause for it, I undertook to ascertain it. I have, this fall, been wonderfully favored in this line of study.

Near my home, on a well-travelled, level road, for the distance of thirty rods, the land (a cultivated field) on one side of the road is quite steep, so that every time it is plowed the soil is turned down, forming a bank which is held back by a loose wall of stone and rocks.

In this wall, and on the lower side, trees of several kinds have grown to various sizes from four inches to fifteen inches.

Necessarily, most of the roots are on one and the upper side. Fifty-two of these trees have been cut down, this fall, giving a fine opportunity for study and observation.

Where all the roots are on one side, the heart will be found on the opposite side. Over the large and main roots will be found corresponding limbs, necessitating more rapid growth on that side of the tree,—the rings there being much thicker than on the other side.

Thick rings, or large yearly growths, contain the most sap.

Here is a point for maple sugar-makers to observe; tap under the largest limbs, the furthest from the heart, where the sap is more plentiful and the sweetest.

My observations lead me to the conclusion that points of the compass have nothing to do in settling the question as to the cause of this one-sided growth.

Where a tree stands on level ground, and is equally fed all around, the heart will be found in the center.

If any one has a shade or ornamental tree growing in good soil, having the limbs mainly on one side, rendering the tree ill-shaped, it can be restored to its normal shape by spreading a thick coat of manure on the opposite side. I once had a fine and well-proportioned apple tree, standing on level land, so loaded with apples that all the limbs on one side broke down, I fixed up the wounds as well as I could, then I spread a good coat of manure on that side, and now it is a well-proportioned tree.

I send you a block of wood with the heart on one side, also a photograph of the same, made by Cooley, of Waterbury, Conn.

On page 22 of your February number, 1899, you say, "It is very interesting to see a piece of wood with the pith near the circumference instead of in the center of the stem." For this reason I send you this specimen.

Moscow, Vt. TIMOTHY WHEELER.

[These excellent notes, from our wide-awake correspondent, are in accord with the observations of intelligent gardeners. Every annual layer of wood has its start in the spring,—or, rather, about mid-summer,—in the last-formed cells of the previous year. What is, in botany, called the alburnum, is simply the mucous food-matter prepared for the nourishment of the young cells, budding forth from the mother-cells of last year. The size and number of these cells is, in a measure, governed by the amount of this food at command. The thicker portions of the annual ring indicate where food was abundant.

This is beautifully illustrated by the cut annexed. By some accident, when the tree was about twenty years old, the trunk was rifted, some of the wood killed outright, and the vital power of the remaining lowered. The blow to vitality was greater on the off than on the near side. The supply of food was interfered with, if, indeed, the weakened vital power could make use of it, though the supply were full. The cells have simply grown more freely on the side remote from injury.]

FLORIDA WILD FLOWERS.—Florida is regarded as the land of flowers. This fact gave origin to the name of the State. But there is nothing so handsome but can be made more beautiful. A correspondent, under the date of April 15th, writes that the pretty wild flower of Texas, the Drummond Phlox, has become abundantly naturalized in the State, and that the many shades of color we find in gardens, follow them as they extend their territory. The effect of this as an early spring wild flower is described as charming.

THE PRESERVATION OF NATURE.—One beautiful morning, last June, when all nature seemed again awakened to the joy of living, driving along a country highway, quite unexpectedly before us appeared a fine piece of woodland,—beech and maple, with an occasional chestnut.

As we approached nearer, where we could enjoy the full beauty of the woods in early summer, and perchance gather our bunch of wild flowers, we looked up enchanted. Amid the shimmering leaves still glistening with dew in the morning sunlight, were great branches of the large-flowering dogwood. With the air full of the murmurings of insect life, and the birds singing their songs of praise, for a while, "whether in the body or out of the body we could not tell," we felt we were in the midst of a grand hallelujah. As we looked and listened, drinking our fill of the over-flowing cup of cheer held out before us, we heard a note, soft and clear. It came as a solo in the midst of the chorus of song! Holy,—oh! holy—holy. We waited with bated breath, again, and again, came the sweet gentle tones and we rejoiced that once more had been given us the exquisite pleasure of listening to the Hermit Thrush.

But time was hastening us on, and reluctantly we came down from the heights, and with our hands full of the *Cornus* blooms, we went our way. Since that red-letter day, we have often longed for influence in the direction of forest preservation, and in the planting of trees for the increased area.

We plead that those in charge give space for flowering shrubs and trees that do not appeal to those who plant for utility only.

Set out now and then a mountain honeysuckle, an aralia, the laburnums, thorns and elders, and the sweet-brier, the latter growing freely at the edges of quite dense forests.

Among those that grow to large trees, that are desirable in our section, are the *Cornus*, sumac, tulip, and linden. Although the latter is used extensively, commercially, we need it in abundance, as the flowers secrete such quantities of nectar for the bees, those busy little creatures, so useful to us, that of late have had such a struggle for existence, owing to the spraying of fruit trees in blossoming time. Plant for beauty as well as use, making "nature's temples" worthy the name.

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SARAH BALLANTINE BOWERMAN.
Ridge Road, Rochester, N. Y.

PHILADELPHIA'S EARLIEST SPRING FLOWER.—Covering the ground like a snow-storm, *Erophila vulgaris* (*Draba verna*) opens before the frost goes, with a few warm, sunny days. Though so minute, species-makers find a rich treat. Sixty-three species have been named from it in the Old World!

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INTENTIONAL SECOND EXPOSURE

GENERAL GARDENING.

GARDEN FLOWERS.

The lilac purpling with its luscious spires,
  Breathing a milky sweetness, like the balm
From Aden's groves of myrrh, where summer fires
  The living world to rapture; but the calm,
    cool shade of spreading maples, than the palm with all its crimson clusters, charms me more;
The violet lurking underneath the palm
Of withered grass tufts, has a clearer store
Of sweets, than all the flowers that grow on Ceylon's shore. PERCIVAL.

THINNING THE FRUIT ON TREES.—The notes under the above heading, in the March issue of the MONTHLY, are interesting and timely. The season will soon arrive when the excellent hints may be acted on.

The reference to the Silver Maple, as illustrating how fruiting will retard growth, leads me to add to what you say, that a tree of this, bearing seeds freely, will make no growth at all until the seeds fall. As soon as this occurs, away go the new shoots, they receiving the nourishment the seeds had demanded.

A very good way to determine whether or not a tree is overbearing is to examine its growing shoots. If these are making a reasonable length and caliper, the tree is not overtaxed, though it may still be desirable to thin the fruit to some extent, to increase the size of what are left.

In this connection, it should be remembered that the seed vessls of rhododendrons, azaleas and other flowering shrubs, are "fruit" in all that has been said in regard to its retarding growth by consuming nourishment. Cut off all useless heads as soon as flowering is over, that the energies of the plant may not be wasted in developing useless seeds. J. M.

GRAPE-VINE GROWING ON AN ELM TREE.—A correspondent sends and queries the following:—"Some time ago Geo. Febry, College of St. James, Washington Co., Maryland, bored a hole through an elm tree and inserted a growing Concord grapevine, which, when it had grown so it filled the hole, was cut off at one end. The vine continued to grow, being fed with sap from the elm tree, and bore luscious grapes."—*Baltimore Sun.*

[This is not improbable if the heart of the elm tree was rotten. The vine could send its roots through the rotten material, even down to mother earth. But only in appearance would it be "fed by the sap of the elm tree." The writer knows of a currant bush, that bears freely every year, and has for many years, that has hold in a decayed spot in a linden tree.]

TO DESTROY THE IMPORTED ELM BARK-LOUSE.—The imported elm bark-louse (*Gossyparia ulmi*), is a rather difficult insect to fight. The insecticide work which has been done seems to indicate that badly infested trees should be pruned of all dead and dying branches in the fall, the wounds being covered with thick oil paint. At the same time, the trunk and branches should be scrubbed or sprayed with a strong kerosene emulsion, the standard emulsion being diluted with three parts of water. The following spring the ground beneath the tree should be top-dressed with a good stable manure, and later, in July, the foliage should be sprayed thoroughly with kerosene emulsion diluted with nine parts of water. This is only for seriously injured trees. Where the insect occurs in moderate numbers, the scrubbing and spraying may be done in July with satisfactory results. As to cost, it may be interesting to know that, in 1896, 3,000 young elms were treated at the cost of $21.00. At Carson City, Nevada, the trees on the capitol grounds were thoroughly sprayed, in March, 1896, with a standard kerosene emulsion diluted with nine parts of water, with satisfactory results. At Amherst, the same remedy was successful, and an application of one pound of whale-oil soap to two gallons of water was also successful.

L. O. HOWARD.

U. S. D. of A., Washington, D. C.

FASTIGIATE TREES IN LANDSCAPE GARDENING.—Fastigiate trees, of which class the Lombardy Poplar is a striking example, are valuable in the hands of the landscape gardener in giving greater effect to special conditions in garden art. In the annexed illustration, the Lombardy Poplar comes in charmingly to add to the beauty of an elevated piece of ground, and it performs its part admirably. The pretty scene is located on the grounds of David W. Pepper, Esq., at Chestnut Hill, near Philadelphia. Unfortunately for still better illustration of this excellent effect, the residence, which is quite near and to the left of the picture, is not shown; and the steep terrace, the wall of which can barely be seen, also makes the reasonableness of the planting more pronounced.

FASTIGIATE TREES IN LANDSCAPE GARDENING.

THE BOW-STRING HEMP.—Upon receiving your MONTHLY edition in March, I noticed that the flowering of the plant *Sansevieria Zeylanica* commanded great interest at the Horticultural Society, Chestnut Hill. I wish to state, in regard to that plant, that I have no difficulty in flowering it. I have several fine plants,—one in a twelve-inch pot,—and they have flowered profusely for the last three years. Last September, a small shoot was broken from a plant, was potted and in less than two months it sent up a spike of flowers three feet high. The plant will make immense growth if potted in rich loam and kept in a warm moist house.

We find your MONTHLY cannot be excelled for the valuable information it contains. All garden lovers should read it as they will find it a great help, as only the brightest ideas are suggested in it. WM. FREDERICK, Gardener.

Zoological Gardens, Philadelphia.

PROPAGATING THE DATE PALM BY CUTTINGS.—In an item headed "Date Palms from Cuttings," in the March number of your MONTHLY, you display an evident ignorance of the method of progagating Date Palms. The only error, in the "official paragraph" you mention, is in regard to the place the Date Palm cuttings (suckers) from Africa were set. The carload, that was secured from Northern Africa through Professor Walter T. Swingle, and of which Director R. H. Forbes of the Arizona Experiment Station, took charge upon its arrival here, was set in the valley in which Phœnix is located. Part of them were set out about two miles from the city, and the remainder about twelve miles distant, all on land under the control of the Station. As stated in the paragraph you criticize, in three or four years, cuttings (or suckers as they are commonly called) will be available for distribution from the

above plants, which are themselves growing from cuttings from African Palms. This is the only method by which commercial dates are produced. A. J. McCLATCHIE.

Phœnix, Arizona.

[The experiment Station, at Phœnix, Arizona, is doing such good work in regard to the introduction of the Date Palm to regions admirably adapted to its culture, that it may seem ungracious to criticize the manner of its work. But the criticism was rather in the light of investigation than complaint. We still have to display evident ignorance of the manner of propagating the Date Palm, and we—and, no doubt, our readers, would feel indebted to Professor McClatchie for enlightenment. In the countries dependent largely on the Date Palm for their prosperity, they have numerous named varieties, as we have of our garden fruits. These improved varieties must be individually propagated. In horticulture, a "cutting," is well understood to be a branch to be rooted. As palms have no branches they cannot be propagated in this way. Mr. McC. now says that he uses a "cutting" as synonymous with a "sucker." We must again display our ignorance of any one person who regards the terms identical. In the "Bulletin 26," which he kindly sends us, he does not use the word "cutting" once, but "sucker" is employed throughout.

However, no one can understand how a palm that does not branch can have its varieties propagated except in some way as by root suckers, but as no one outside of the Orient ever saw the Date Palm sucker, we have to ask how the Orientals produce the suckers? If we are going into date culture in America, it would be worth knowing.]

NOTES ON SISYRINCHIUM.—Seeing a note regarding *Sisyrinchium grandiflorum*, recently, I would like to add, that it is a good plant for winter blooming. Here it is one of our most common wild flowers, known commonly as Grass Flower. It blooms early in the spring, and, when our dry season begins, it dries up, so that a plant shows few signs of life at this season. The roots are brittle,—the plant is very small.

When autumn rains begin, it soon starts new growth, and, by the time winter sets in, it is ready for spring flowering.

If brought into a warm room in winter, the plants start to growing at once, and, in a few days, are in bloom.

In experimenting with the plants, I potted them after the first rains in autumn, kept them growing out of doors until after freezing weather came on, when I put the plants in a cold place where they would remain frozen.

A few at a time were brought into the house; they were soon in bloom and, by keeping the plants rather cool after they were in bloom, the flowers lasted quite well. The color is a pretty shade of pink, with pure white and rosy crimson for extremes of variation. We have another species of *Sisyrinchium* that blooms later. The foliage is prettier but flowers much smaller. It may be the same as your correspondent described. My specimen is labelled *Sisyrinchium mucronatum*.

Cheney, Washington. SUSAN TUCKER.

ARALIA SPINOSA.—Of the large ornamental shrubs, there are few more ungainly in their winter aspect than Hercules' Club, *Aralia spinosa*. They look like curious walking canes prepared for giants, and driven into the ground without order or system. But when in leaf and flower, they are delightful, and especially in flowering time. The huge masses of white flowers have a slightly rosy tint, and attract the attention of even the most callous to the charms of nature. The group illustrated on opposite page is from a scene in Fairmount Park, Philadelphia, from a photograph taken by Miss Marie Thackara.

NEW OR RARE PLANTS.

A NEW ORCHID, CYPRIPEDIUM INSIGNE ERNESTII.—Considerable interest was awakened at a recent exhibition of the Chestnut Hill Horticultural Society where a new orchid was exhibited by Mr. Edwin Lonsdale, a florist near Chestnut Hill, who is noted for his great love for flowers and for Cypripediums and Begonias in particular. The flower of this orchid, *Cypripedium insigne Ernestii*, is of a pale green color, and while few persons would consider it more beautiful than the type, it is a valuable acquisition at least for its distinctiveness. The history of this plant is not uninteresting as told by Mr. Lonsdale, and will show the great value of it considered commercially.

"The plant of *Cypripedium insigne Ernestii*, which was exhibited at the last meeting of the Chestnut Hill Horticultural Society, was a part of a plant, the original of which first flowered at Wyndmoor a few years ago, and which came among a lot of wild unflowered *Cypripedium insigne* that had been bought in New York. Two flowers were produced the first time it flowered, one of which was mailed to an expert orchidist residing in America, asking advice as to its possible value; the other was forwarded to a representative of one of the English orchid specialists at that time traveling in America. From the first mentioned not a word was heard at all, but the latter inquired by mail as to its value in dollars and cents. Word was sent that $50.00 would buy it. Weeks passed, months passed, still no word. All hope of effecting a sale was gone.

The plant was divided. Four nice little plants resulted therefrom, when after a few more weeks had passed, the expert from Europe telegraphed that he would set sail for home on the following Saturday and to send on the plant. Word was sent to the effect that the plant had been divided, and because so long a time had elapsed since the offer was made with no acceptance, that three of the plants would be sold for $50.00 and the fourth would be retained. The last offer made was accepted and plants forwarded, and eventually flowered in their European home, when a complaint came that it did not come up to expectations Immediately word went to Europe to return the whole stock and strike off the $50.00 credit allowed. But, no, the firm with some adroitness preferred to keep the plants, which was done.

ARALIA SPINOSA IN FLOWER. (SEE PAGE 71.)

Eventually the plant remaining here flowered and was submitted for examination to experts, and favorable comments were freely given, and with the encouragement received, it was offered for sale to an orchid connoisseur. Price asked was $250,00; after a little chat a sale was effected for $200,00, and when large enough to divide, a small plant was to be returned to the original owner, and that was the plant on exhibition at Chestnut Hill on Tuesday evening last."

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When autumn rains begin, it soon starts new growth, and, by the time winter sets in, it is ready for spring flowering.

If brought into a warm room in winter, the plants start to growing at once, and, in a few days, are in bloom.

In experimenting with the plants, I potted them after the first rains in autumn, kept them growing out of doors until after freezing weather came on, when I put the plants in a cold place where they would remain frozen.

A few at a time were brought into the house; they were soon in bloom and, by keeping the plants rather cool after they were in bloom, the flowers lasted quite well. The color is a pretty shade of pink, with pure white and rosy crimson for extremes of variation. We have another species of *Sisyrinchium* that blooms later. The foliage is prettier but flowers much smaller. It may be the same as your correspondent described. My specimen is labelled *Sisyrinchium mucronatum*.

Cheney, Washington. SUSAN TUCKER.

ARALIA SPINOSA.—Of the large ornamental shrubs, there are few more ungainly in their winter aspect than Hercules' Club, *Aralia spinosa*. They look like curious walking canes prepared for giants, and driven into the ground without order or system. But when in leaf and flower, they are delightful, and especially in flowering time. The huge masses of white flowers have a slightly rosy tint, and attract the attention of even the most callous to the charms of nature. The group illustrated on opposite page is from a scene in Fairmount Park, Philadelphia, from a photograph taken by Miss Marie Thackara.

NEW OR RARE PLANTS.

A NEW ORCHID, CYPRIPEDIUM INSIGNE ERNESTII.—Considerable interest was awakened at a recent exhibition of the Chestnut Hill Horticultural Society where a new orchid was exhibited by Mr. Edwin Lonsdale, a florist near Chestnut Hill, who is noted for his great love for flowers and for Cypripediums and Begonias in particular. The flower of this orchid, *Cypripedium insigne Ernestii*, is of a pale green color, and while few persons would consider it more beautiful than the type, it is a valuable acquisition at least for its distinctiveness. The history of this plant is not uninteresting as told by Mr. Lonsdale, and will show the great value of it considered commercially.

"The plant of *Cypripedium insigne Ernestii*, which was exhibited at the last meeting of the Chestnut Hill Horticultural Society, was a part of a plant, the original of which first flowered at Wyndmoor a few years ago, and which came among a lot of wild unflowered *Cypripedium insigne* that had been bought in New York. Two flowers were produced the first time it flowered, one of which was mailed to an expert orchidist residing in America, asking advice as to its possible value; the other was forwarded to a representative of one of the English orchid specialists at that time traveling in America. From the first mentioned not a word was heard at all, but the latter inquired by mail as to its value in dollars and cents. Word was sent that $50.00 would buy it. Weeks passed, months passed, still no word. All hope of effecting a sale was gone.

The plant was divided. Four nice little plants resulted therefrom, when after a few more weeks had passed, the expert from Europe telegraphed that he would set sail for home on the following Saturday and to send on the plant. Word was sent to the effect that the plant had been divided, and because so long a time had elapsed since the offer was made with no acceptance, that three of the plants would be sold for $50.00 and the fourth would be retained. The last offer made was accepted and plants forwarded, and eventually flowered in their European home, when a complaint came that it did not come up to expectations Immediately word went to Europe to return the whole stock and strike off the $50.00 credit allowed. But, no, the firm with some adroitness preferred to keep the plants, which was done.

ARALIA SPINOSA IN FLOWER. (SEE PAGE 71.)

Eventually the plant remaining here flowered and was submitted for examination to experts, and favorable comments were freely given, and with the encouragement received, it was offered for sale to an orchid connoisseur. Price asked was $250,00; after a little chat a sale was effected for $200,00, and when large enough to divide, a small plant was to be returned to the original owner, and that was the plant on exhibition at Chestnut Hill on Tuesday evening last."

THE SWEET PEA.—Progress in variation has been remarkable with the Sweet Pea. The

INTENTIONAL SECOND EXPOSURE

Pan-American Exposition is taking a hand in helping it along. A special exhibit, under various classes, is to be held on the opening day, July 23rd. Entries must be made not later than July 20th, and specimens be in place not later than noon on the opening day.

UPRIGHT BIRCH.—Landscape gardeners make a study of the forms of trees when working out artistic plans in garden art. Upright trees, of the character of the Lombardy Poplar, are often found invaluable in securing special effects. Among these are special characters. The Birch, in general, is characterized by a gentle gracefulness,—and in the upright form this goes with it. The one illustrated is a variety of the English, *Betula alba*, which is, possibly, the most graceful of all the species.

UPRIGHT BIRCH.

THE HARDY FLOWER GARDEN.

WILD FLOWERS FOR CULTIVATING.—As an early bloomer for use in the greenhouse, for button-hole bouquets, mixed in with sweet-scented violets, none are handsomer or better than the colored violet—the wild Pansy or Johnny-Jump-Up. They are of all colors of purple and blue, lead-colored and splashed, dashed and dotted. I placed a few bunches in my violet pit for give-away flowers, and they would have sold exceedingly well if there had been a market here for them or if I had been in the environs of a great city. Other flowers which could be made use of, for forcing or otherwise, would be *Coreopsis lanceolata*, *Dodecatheon Meadia*, yellow violets and *Viola hastata*. This latter is small, but in great variety and quite attractive thereby.

The Wild Crab-Apple, *P. coronaria*, is desirable for both blossom and fruit, the fruit measuring two inches in diameter, very acid, a good keeper and desirable for preserving. I have three small trees and they make, when they are cultivated, shapely little trees. Belonging to the same family is the *Cratægus crus-galli*, Hawthorn, a first-class hedge plant, with handsome white flowers and large, showy, red berries which hang on late into the winter and have, when broken open, the taste and smell of apples. The *Rosa humilis*, dwarf wild rose, with its large blossoms and red fruit, and the *Rosa setigera*, Climbing Rose or Prairie Rose, are desirable. *Eryngium yuccæfolium*, Button Snakeroot or Rattlesnake-master is a Cactus-like plant and, for variety's sake, is worth a place in the garden. *Panax quinquefolium*, Ginseng, is very scarce here. I know of but one place in this section where it can be found, and but little of it. *Symphoricarpos vulgaris*, or Coral berry, is known in this section as Buckberry. In the fall it is filled with long strings of purplish-red berries. *Cephalanthus occidentalis*, Button-bush, grows here in the water courses, as it does in the State of Maryland, also.

Hibiscus militaris, Halbert-leaved Rose-mallow, grows near the streams, but is a white flower with a purple eye, four to five inches in diameter. F. K. STEELE.

Festus, Mo.

IRIS, "MME. CHEREAU."—One of the most distinct sections of the many varieties of hybrid Iris is recognized by having the petals of the corolla delicately fringed or edged with shades of purple, the ground being white. The accompanying illustration, from *La Semaine Horticole*, is an able representation in all except color, and shows the manner of shading. There are several varieties similar in markings and differing only in depth of shading and height of flower-stem; one is known as Louis Van Houtte, and has the tall stalks referred to. As will be inferred from the illustration, the petals are not below the average German variety in size, making very handsome flowers. Many persons, as a rule, prefer deep, solid colors; but this is an exception and liked by all. The tall-stemmed ones are valuable for the centre of an Iris bed.

IRIS "MADAME CHEREAU."

FRUITS AND VEGETABLES.

HISTORY OF FRUITS IN CANADA AND PHILADELPHIA.—Regarding pear and apple culture in Canada, I find that, as early as 1635, pears, apples, plums and cherries were brought from France, and flourish up to this day. Pear culture has fallen into disuse, as "The Pacific Coast" crop can be sold cheaper and comes in earlier—pears are still grown. The celebrated Fameuse Apple is also going out; and the juicy Pomme Gris, also, more's the pity—Nova Scotia, New Brunswick and Ontario, now have the apple and peach crop.

I send, by this mail, a little book, dated 1828. I found this while sorting out of my library, and thought you might like to have it—even though it is not botanical. If you have no use for it, give it to one of your public libraries that might like to have it—the large map has alpha guide to places this is as old a copy of that style of reference I can remember to have ever seen. JOHN HUGH ROSS.

Montreal, Canada.

[The directory-map, so kindly sent, is especially interesting as throwing additional light on the history of grape culture in America, in which Philadelphia claims an early chapter. It is understood that one of the reasons that actuated Penn, in founding Philadelphia, was the adaptation to the growth of the European grape for wine culture. For many years, the European grape flourished. Vineyards were numerous,—wholly planted with this class of vines. It was not till past the first quarter of the last century that trouble began; and not till nearly half a century after that, through the labors of Riley and Lichtenstein, that the discovery was made, that the loss of vital power was due to the attack of a root gall caused by an Aphis, now well known as the *Phylloxera*.

On this map, we find that, in 1828, a very large tract, known as the Francisville Vineyard, comprising a block of grapes occupying nearly fifty acres, was under cultivation, just north-east of the present county prison. This was just beyond the city line, Francis Street—subsequently changed to Coates, and later to Fairmount Avenue,—for Philadelphia is one of the biggest enemies to city history, in changing street names, on this continent. A Powell street, through this property, again connects with grape culture this family name that is already familiar in grape history through the Powell, or Bland Grape. At the same date, 1828, the nursery catalogue of the Bartram Gardens has a list of one hundred and thirty-three varieties, all of foreign introduction, and all grown for out-door culture,—thirty-nine being especially listed for wine culture. The value of our native grapes was not then discovered, though the Isabella, Catawba, Elsinburg, Isabella, Scuppernong, and Alexander

occupy a modest place in the list, with the note that the latter had been found a good wine grape.

It would seem that the trouble with the *Phylloxera* had not been serious, if, indeed, it had made any attack on the foreign grape at this date,—and the fact may be important in tracing the history of this great enemy to the grape grower.]

MANURES FOR THE GARDEN.—In making up your plans for the garden for the coming season—and they should be very broad and liberal—do not forget nor neglect the important question of suitable manure. Whether it be a rod square, an acre or a large market garden, apply to the several plots every ounce of available manure best suited to the needs of the crop to be grown thereon. Thoroughly-well-rotted, horse, stable manure is the gardener's best fertilizer. Wasting a ton of such manure means an actual loss of not less than a five dollar bill to the vegetable grower.

When it becomes necessary to use artificial manures to supplement the natural article, it is advisable to select the quick-acting carriers of the three principal elements, those soluble and immediately available as plant foods; this applies especially to the early crops.

For the early vegetables, the phosphoric acid supply should be obtained from dissolved bone or bone black; for potash, use sulphate of potash, high grade; and, for nitrogen, use sodium nitrate, or nitrate of soda. This last can be used to advantage throughout the growing season in applications of from 50 to 250 pounds per acre, at intervals of from one to two weeks, to stimulate healthy growth, hasten maturity and increase the yield.

Commercial manures may often be used advantageously in conjunction with natural manures. Being generally more soluble or available, they give the plant a much earlier start in the spring, before the natural process of nitrification begins.

Mix together thoroughly the following: 100 pounds nitrate of soda, 200 pounds dissolved bone and 150 pounds sulphate of potash, and apply as much before planting time as possible, in order to allow the ingredients to become well incorporated with the soil. After plants are well established, make frequent applications of small amounts of nitrate of soda to maintain a steady, unchecked growth until maturity. Prevent the stunting of any plant during the early stages of growth, at all events.

R. M. W.

INDIAN BASKETS AND LADY APPLES.—The material used by the Indians in making their ornamental baskets is generally understood to be the roots of trees. The enclosed, from our esteemed correspondent, Mrs. Ross Lewers, of Franktown, Nevada, is the first information that seems to be recorded as to the exact species of roots employed. The diamond figure represents the brown; the other the black. The Lady Apples were about the brightest and best of that variety that could

INDIAN BASKET WITH LADY APPLES.

be raised,—and have been allowed to remain in the basket in the picture to the credit of the State of Nevada. The picture is one-fourth of the actual size.

"I send you by mail, to-day, (December 29th,) a small Indian basket. The black design is made with the outer coating of the roots of the common Brake Fern that grows here; the brown design, from the outer covering of a willow, comes from the western slope of the Sierra Nevadas. I found some Indians washing the roots of fern, last summer, in a creek; some roots were about six feet long. The White Willow grows here.

I put in a bunch of Lady Apples to pack."

C. LEWERS.

BIOGRAPHY AND LITERATURE.

ALONE IN THE WOODS.

The east wind fans a gentle breeze,
The streams and trees glory in the brightness of the spring,
The bright sun illuminates the green shrubs,
And the falling flowers are scattered and fly away.
The solitary cloud retreats to the hollow hill,
The birds return to their leafy haunts.
Every being has a refuge whither he may turn,
I alone have nothing to which to cling.
So, seated opposite the moon shining o'er the cliff,
I drink and sing to the fragrant blossoms.

Translated from the Chinese of Le Tai-pih.

CABBAGE, CAULIFLOWER AND ALLIED VEGETABLES, FROM SEED TO HARVEST.—By C. L. Allen. Illustrated, 12mo. pp. 100, cloth, Orange, Judd Co., New York.

It is interesting to note that nearly all the great progress that has been made in the improvement of garden vegetables has been made by those who were wholly ignorant of the causes thereof. They see, from experiences, that certain things occur in the direction of certain lines—and these lines they follow till the pathway ends. The little book now under consideration is one of great practical value. Whether one is growing members of the cabbage family for market gardening or for amateur gardening, he will find Mr. Allen's practical experience, as detailed here, of great value. The reasons given for the successful practice may not always be sound,—but this is of secondary consequence.

A LESSON FROM THE CARNATION.—The senior conductor of MEEHANS' MONTHLY is averse to intruding personal matters on the reader. He has been, however, requested to explain for the readers of the magazine, the nature of the carnation lesson referred to in the following extract from recent Philadelphia daily papers. The best reply will be the response itself, premising that the school is for little girls, ranging from six to ten years, and numbers about 450 pupils. The bunch of carnations contained seventy-five flowers corresponding to the age of the recipient:—

"A handsome silver loving cup was presented by the teachers of the Central Combined Girls' Primary School to Councilman Meehan, on his seventy-fifth birthday, last Thursday. At the same time, also, the pupils of the school presented him with a beautiful boquet of carnations. The acknowledgment of the children's pretty little gift was especially characteristic of the venerable old Councilman, as, after expressing his appreciation, he wrote them out a simple history of the carnation as a nature lesson. Mr. Meehan retires from the School Board of this Section, this month, after twenty-three years service, during nearly the whole of which time he has been Chairman of the Committee on the Central Combined School."

"My young friends:—

The beautiful flowers you gave on March 21st, my 75th birthday, were very grateful to me. I could not have had a more agreeable testimonial of your kind feelings.

Flowers have been, in all ages, the happiest manner of showing our regard for friends, and the carnation that you chose for me has had a high place in the language of flowers. The citizens of the ancient City of Rome, two thousand years ago, made wreaths of carnations to crown those whom they publicly honored, and for this reason its name among them was 'Flower of the Gods.'

I shall always remember the carnation in connection with your goodness, and return you my best thanks for the honor, and for the kind spirit that made you think of me."

As a personal paragraph has managed to creep in, it may not be out of place to add, that though he was not re-elected for another term of three years in the School Directory,—he has been retained for another term of two years as a member of Philadelphia Common Council,—to which he has been continuously elected since 1883.

REA BROTHERS.—The well-known firm of Rea Brothers, proprietors of the Norwood Nurseries, in Massachusetts, has been dissolved by mutual consent and Frederick J. Rea becomes sole proprietor.

BOTANY OF CALIFORNIA.—Charles Russell Orcutt, of San Diego, California, has issued a check-list of the flowering plants, ferns, marine algæ, etc., known to occur in San Diego, Riverside, San Bernardino, Orange and Los Angeles counties, California, and North Baja, California, with notes, and descriptions of many species.

NAMES OF AMERICAN TREES.—Modern botanical authors find that the law of priority has not always been strictly obeyed by the earlier writers, and that some fifty American trees, for well on to a hundred years, botanists have been calling by wrong names. For instance, the Silver Maple which, since 1789, we have been calling *Acer dasycarpum* should have been, during this long time, *Acer saccharinum*,—that which we have, since 1787, called *Acer saccharinum*, should have been *Acer saccharum*,—and so on. We can all admit that it was very, very, naughty in some of these early botanists to ignore prior names, though they themselves mostly felt they had good reasons for so doing. But the wisdom of trying to get the whole world to change names, which have become a part of universal literature, is doubtful. The discussion about it reminds one of some debates in boys' lyceums. One in the writer's recollection was something like this: Some hundred years ago, a man, who certainly deserved to be hung, escaped through a plea which was afterwards found to be erroneous; and the question was, Have his descendants any right to live? It was decided that theoretically they had not,—but that it would not be good policy now to put them to death! The earlier botanists did wrong, but died before their wrong could be righted,—but should we go through this serious revolution to make up their slips?

THE LILY AND ITS SYMBOLS.—In the presence of the Easter-time, when the lily pervades the real and artistic atmosphere, I am impelled to wear a shade over my realistic eye that it be not offended at some of the delineations in publications whose editors are less careful in reading proof for their illustrations than for other "copy."

I have before me some ornate frontispieces portraying the lily with five and six petals (all petals) indiscriminately, and one where the number is reduced to four; an unjustifiable intrusion of *Liliaceæ* into *Cruciferæ*, even if intended to be symbolic.

Conventionalized forms that are evolved from the artistic "inner consciousness" may be pardoned, if recognizable; but a portrait of the lily with four or five petals is an inexcusable artistic untruth.

I have ventured to call the lyric muse to aid in hope that some "artist" may be impressed with the persistent truth that the calyx and corolla of the lily join to make a six-membered perianth. Any other formation is as great an artistic and realistic offense as a three-legged horse or a one-eyed Peri.

Yours sincerely for truth in art as well as in nature. ROBERT W. VASEY.

Chicago, Ill.

For you I've plucked the daisy,
  For you the violet blue,
And, when the rose was blooming,
  I bore it swift to you.
I bring you now a lily,
  A many flowered spray;—
Come read, dear-heart, the message
  It bears to you this day.

These six-fold seeming petals
  Are two hearts joined in one;
A king and queen of beauty
  United in their throne.
From out the circling perianth
  Springs, lordly, o'er the whole
The pistil, like a sceptre;
  Emblem of joint control.

Swayed by the perfumed breezes,
  The nodding anthers shower
The tribute of their pollen,
  Like incense, on the flower.
Here, where the stately blossoms
  Join their united stems,
An emerald whorl enfolds them;
  Fit setting for such gems.

Symbol of hearts united,
  Can you, dear-heart, not see
That, with this spray of beauty,
  Is borne a wish from me?
The message of the lily,—
  Ah, yes, your eyes have seen;—
Is "I would be a king, love,
  If you will be my queen."—R. W. V.

GENERAL NOTES.

ALCOHOL FROM LICHENS.—Why could not *Cladonia rangiferina* and other starchy lichens, such as grow in the far North, be utilized for the production of alcohol? They are said to be so employed in Scandinavia. C. W. G.

THE COTTON PLANT.—Herodotus speaks of the trees of India, about 450 B. C., and the natives manufacturing cloth from them. From India, cotton was introduced to Greece and Rome. Cæsar had his tents covered with cotton cloth. Calico was first printed in Calicut, India, hence its name calico. But Calicut was nearly a ruin before coming into possession of the British. Some cotton flowers are yellow; sometimes they are striped with purple. They are of the hollyhock family; the genus is *Gossypium*, natural order *Malvaceæ*, and a native of the tropical parts of Asia, Africa and America.

It was a tedious process to prepare a pound of cotton before Whitney's invention of the cotton gin. A pound was a day's work, and even Whitney at first thought fifty pounds a good day's work with the use of his invention of 1793-4. Eli Whitney was born in Massachusetts, 1765, and, when a young man, went to Georgia, and it happened that he travelled with the widow of Gen. Greene, who became a helpful friend to him. His invention was so useful and simple that the Georgians stole it and used his machines without compensation.

But his invention changed the destiny of cotton, and made it at once comparatively cheap and useful, though it was not at once introduced to New England; and being expensive, it was thought a very fine thing with farmers' wives, who raised flax on their own acres, to buy a little cotton to mix with their linen for towels, tablecloths, etc. Later, however, their descendants thought much more of the purely home-made all-linen than "that cheap stuff—half-cotton." So fashions change; dear-bought is the precious article; the common and useful hardly thought of more than chips the woodman makes in a vast forest. Also, wool has been mixed with cotton and made cheaper products than all wool, and perhaps as useful for many purposes. I have been told, by merchants, that cotton was so carded with wool and so thoroughly commingled that it could not be identified except from the softer feeling of the fabric, even by experts.

Almost, perhaps one had better say, every plant that grows has its own place of utility, if, like the orchid, beauty is its only gift; and, as some botanist has said, that the orchid is the last created flower and consequently the most beautiful if the last flower discovered, who knows that it was the last thought of, for, as another has said, "every flower is a thought of God."

Many years ago, in Vermont, Mr. H. C. Orcutt sent to Georgia for cotton seed, and we raised some plants in the house. The flowers were cream color, and, just as the snow-white cotton was bursting from the bolls, my father, Dr. Gray, came in, and I called his attention to the plants. It was like opening a door through which he looked back upon the far distant past. He said, "when I was a boy, I saw my mother and her maids picking the seeds from just such bolls." The cotton, when prepared, was carded and spun and woven in the house, all done by the hand of the diligent.

Since coming to California, I have seen cotton stalks so large as to be almost called trees, as in India, of old,—at least like shrubs,—and the flowers were large and deeply striped with dull red and purple, not nearly as delicate, naturally, as those raised under shelter. It might have been a different species, however.

San Diego, California. MRS. E. E. ORCUTT.

INTERESTING VARIETIES OF WOOD. — Indigenous trees are easily recognized by the observing inhabitants of any locality as belonging to certain general classifications.

Pine, oak, elm, maple, chestnut, and some others, are so common in most temperate climates that they are familiar to everyone. That these distinct divisions have been sub-divided

into hundreds of minor classifications is not so well known.

It will be in the province of the exhibit at the Pan-American Exposition to demonstrate in this connection some exceedingly interesting peculiarities, or seeming mistakes in nature.

The large forest tree, commonly known as Basswood (*Tilia Americana*), offers an easy illustration of this phenomenon. The Basswood tree of commerce, at its best, produces lumber as white as bleached linen, possessing a soft, free grain, the boards of which are pleasant to "work" and do not readily shrink nor warp. In the same "bush" are found trees of this family that may produce lumber of any shade of yellow or green. The grain also varies from "free" to what lumbermen have aptly termed "lock stitch," a variety which may be as easily split diagonally as lengthwise. Names, such as white-wood, which produces green-colored lumber, tulip, linden, pepperidge, cucumber, etc., designating these different grades, are very confusing as they only possess local significance.

White Pine (*Pinus strobus*), that aristocrat of the pine family eighty years ago, stood in every forest throughout the Northern States and Canada. It easily held its lofty top proudly above all other virgin trees, until the white man came. As fast as the settler could accomplish the necessary labor, these lordly trees were felled and burned along with their lesser neighbors, in the usual process of clearing the land. Settlers were materially assisted in this work of destruction by the sawmill men and the log rafter. So thorough and persistent were these early pioneers that, within the allotted span of one life-time, this noble tree disappeared.

As though nature designed that retribution should follow such wanton destruction, she has persistently declined to reproduce this valuable forest tree. Hybrid pines, which somewhat resembled White Pine, have later stood on the same land, but that peculiar free, velvety grain is lacking. These hybrids are called by woodsmen Yellow Pine. This should not be confounded with the Southern Yellow, or Georgia Pine, (*Pinus palustris*). It is but a lumberman's name for what he considers a degenerate White Pine. Many men learned in the mysteries of woodcraft have claimed this variety to be the illegitimate progeny of the once famous White Pine. If this be true, the Scrub Pine, so common in old slashings, must be the third generation. Scrub, or Buckwheat Pine, as it is contemptuously called by woodsmen, is a small variety, so full of pitch and knots as to be almost worthless for lumber, although some of the best trees are cut into scantlings.

Visitors to the Exposition will find the Forestry exhibit different from anything of the kind so far undertaken. The varied facilities and vast resources to draw from, embracing, as they do, every American country from the North Pole to Cape Horn, present possibilities that have never been equalled.

HERBERT SHEARER.

ORRIS-ROOT.—Orris-root, the rhizomes of *Iris florentina*, has been singularly overlooked by wide-awake Americans who are ever on the lookout for something on which "a good snap" might be made. As it has long been grown as an ornamental garden plant, there is no question about its successful adaptation to culture here. It is one of the staple bases on which many popular perfumes are constructed, and would always find a ready market. European papers tell us that the demand there for it is so lively, that prices have risen considerably, and, indeed, it is believed that the stock in hand is behind the probable demand.

AUSTRALIAN APPLES.—Parts of Australia are becoming lively rivals to Canada and the United States in the European apple trade. Tasmania, especially, has been found a first-class apple-raising country. There are 8,373 acres in apple orchards there—and the product, in 1899, was 363,915 bushels.

HORTICULTURE IN NATAL.—Gardening in Natal is akin to gardening in Florida, in the United States. The fruits and vegetables popular there are just like those raised by Florida growers. — Oranges, lemons, pine-apples, and bananas, are the staple fruits.

EXTENSIVE FRUIT CULTURE.—Fruit culture is often conducted on a large scale in little England, as well as in great America. A manufacturer of jam and jelly has a thousand acres at Histon, near Cambridge, employing, at times, eight hundred hands. The factory is in the centre of the fruit farm.

APIOS TUBEROSA

APIOS TUBEROSA.

HOPNISS. GROUND NUT.

NATURAL ORDER, LEGUMINOSÆ.

APIOS TUBEROSA, Moench.—Calyx somewhat two-lipped, the two lateral teeth being nearly obsolete, the upper very short, the lower longer. Standard very broad, reflexed; the long scythe-shaped keel strongly incurved, at length coiled. Stamens diadelphous. Pod straight or slightly curved, linear, elongated, thickish, many seeded. A perennial herb (with some milky juice!) bearing edible tubers on underground shoots, twining and climbing over bushes. Leaflets five to seven, ovate-lanceolate, obscurely stipellate. Flowers in dense and short-often branching—racemes. Flowers brown, purple, or chocolate-color, violet scented. Gray's *Manual of the Botany of the Northern United States;* see also Wood's *Class-book of Botany*, Chapman's *Flora of the Southern United States*, and Britton & Brown's *Illustrated Flora of the Northern States.*

In *Apios tuberosa*, we have one of the most entertaining and instructive of our native flowers. It is one of the few that have entered into prominence in polite literature. In one of Whittier's masterpieces, "The Bare-footed Boy," it is given as one of the pleasant objects that gave happiness to the boy's country life.

"O for boyhood's painless play,
Sleep that wakes in laughing day,
Health that mocks the doctor's rules,
Knowledge never learned of schools,
Of the wild bee's morning chase,
Of the wild flower's time and place,
Flight of fowls and habitude
Of the tenants of the wood;
How the tortoise bears his shell,
How the wood-chuck digs his cell,
And the ground-mole sinks his well;
How the robin feeds her young,
How the oriole's nest is hung,
Where the whitest lilies blow,
Where the freshest berries grow,
Where the ground-nut trails its vine,
Where the wood-grape's clusters shine;
Of the black wasp's cunning way,
Mason of his walls of clay,
And the architectural plans,
Of gray hornet artisans!—
For, eschewing books and tasks,
Nature answers all he asks;
Hand in hand with her he walks,
Face to face with her he talks,
Part and parcel of her joy,—
Blessings on the barefoot boy!"

It is, indeed, to the "barefoot boy," or observers of that class, that we are indebted for the clearing up of many of the mysteries around the life-history of the "ground-nut vine." The frequently noted paucity of fruit on the plants has often attracted remark in the higher circles of botanical knowledge, and many curious explanations have been given from the learned point of view. For instance, in the "Entomologist and Botanist," a short-lived but valuable publication, by Walsh and Riley, it is noted by another good botanist, Elihu Hall, "I have only once met with it in fruit in the State of Kansas. Its flowers are very fragrant, thus attracting insects that may destroy the fertile organs by undue irritation, thus producing premature dissemination of the pollen." This, in vol. II., page 191. He then refers to the roots and says "the habit of reproducing itself by tubers is the supposed cause of its infertility." At this suggestion, one might wonder how the tuberous rooted, seed-shunning plant ever made its way over the world, for it is one of the most widely disseminated of our native flowers. It was noted as growing in Canada, by one of our earliest historians, Jacob Cornutus, who published, in Paris, in 1635, a history of the plants of Canada. It extends over most of the northern portion of the Continent east of the Rocky Mountains. Aside from the fact of the wide distribution of the plant, other tuberous-rooted plants seed freely. Then we have the judicious and usually strict, fact-loving Dr. Asa Gray speculating on the same subject. At a meeting of the Connecticut Valley Botanical Society, on Oct. 6, 1875, he is reported, in the 8th vol. of the Bulletin of the Torrey Botanical Club, page 64, to have said, "The style is never coiled in an unvisited blossom, though coiled one turn after being rifled by bees,—the tip at first being lodged in a little sac at the

COLOR PLATE

APIOS TUBEROSA.

HOPNISS. GROUND NUT.

NATURAL ORDER, LEGUMINOSÆ.

APIOS TUBEROSA, Moench.—Calyx somewhat two-lipped, the two lateral teeth being nearly obsolete, the upper very short, the lower longer. Standard very broad, reflexed; the long scythe-shaped keel strongly incurved, at length coiled. Stamens diadelphous. Pod straight or slightly curved, linear, elongated, thickish, many seeded. A perennial herb (with some milky juice!) bearing edible tubers on underground shoots, twining and climbing over bushes. Leaflets five to seven, ovate-lanceolate, obscurely stipellate. Flowers in dense and short-often branching—racemes. Flowers brown, purple, or chocolate-color, violet scented. Gray's *Manual of the Botany of the Northern United States;* see also Wood's *Class-book of Botany*, Chapman's *Flora of the Southern United States*, and Britton & Brown's *Illustrated Flora of the Northern States.*

In *Apios tuberosa*, we have one of the most entertaining and instructive of our native flowers. It is one of the few that have entered into prominence in polite literature. In one of Whittier's masterpieces, "The Bare-footed Boy," it is given as one of the pleasant objects that gave happiness to the boy's country life.

> "O for boyhood's painless play,
> Sleep that wakes in laughing day,
> Health that mocks the doctor's rules,
> Knowledge never learned of schools,
> Of the wild bee's morning chase,
> Of the wild flower's time and place,
> Flight of fowls and habitude
> Of the tenants of the wood;
> How the tortoise bears his shell,
> How the wood-chuck digs his cell,
> And the ground-mole sinks his well;
> How the robin feeds her young,
> How the oriole's nest is hung,
> Where the whitest lilies blow,
> Where the freshest berries grow,
> Where the ground-nut trails its vine,
> Where the wood-grape's clusters shine;
> Of the black wasp's cunning way,
> Mason of his walls of clay,
> And the architectural plans,
> Of gray hornet artisans!—
> For, eschewing books and tasks,
> Nature answers all he asks;
> Hand in hand with her he walks,
> Face to face with her he talks,
> Part and parcel of her joy,—
> Blessings on the barefoot boy!"

It is, indeed, to the "barefoot boy," or observers of that class, that we are indebted for the clearing up of many of the mysteries around the life-history of the "ground-nut vine." The frequently noted paucity of fruit on the plants has often attracted remark in the higher circles of botanical knowledge, and many curious explanations have been given from the learned point of view. For instance, in the "Entomologist and Botanist," a short-lived but valuable publication, by Walsh and Riley, it is noted by another good botanist, Elihu Hall, "I have only once met with it in fruit in the State of Kansas. Its flowers are very fragrant, thus attracting insects that may destroy the fertile organs by undue irritation, thus producing premature dissemination of the pollen." This, in vol. II., page 191. He then refers to the roots and says "the habit of reproducing itself by tubers is the supposed cause of its infertility." At this suggestion, one might wonder how the tuberous rooted, seed-shunning plant ever made its way over the world, for it is one of the most widely disseminated of our native flowers. It was noted as growing in Canada, by one of our earliest historians, Jacob Cornutus, who published, in Paris, in 1635, a history of the plants of Canada. It extends over most of the northern portion of the Continent east of the Rocky Mountains. Aside from the fact of the wide distribution of the plant, other tuberous-rooted plants seed freely. Then we have the judicious and usually strict, fact-loving Dr. Asa Gray speculating on the same subject. At a meeting of the Connecticut Valley Botanical Society, on Oct. 6, 1875, he is reported, in the 8th vol. of the Bulletin of the Torrey Botanical Club, page 64, to have said, "The style is never coiled in an unvisited blossom, though coiled one turn after being rifled by bees,—the tip at first being lodged in a little sac at the

COLOR PLATE
INTENTIONALLY SECOND

apex of the standard." The "barefooted boy" would, however, note that, as usually seen in fruit, there would be but one or two seed vessels on a branch that had borne scores of flowers, all of which were presumably "visited by bees," and, on Dr. Gray's speculation, should have borne seed as well as the few noted.

In our picture, it may be seen that there are only three loments following the numerous blossoms that usually form a bunch. This will be found the usual condition when the plant is flowering in its climbing stage. This is true of many other woody leguminous plants,—the common Wistaria, of China, a relative of our ground-nut, being a well-known illustration. It is simply a matter of nutrition. The plant cannot sustain vigorous growth and abundant seed-bearing at the same time. When vegetative luxuriance has terminated, these plants produce seed abundantly. This has been shown, some years ago, by the author, in a paper published in the "Proceedings of the Linnæan Society of London." In the case of our ground-nut, our picture was made from a branch still striving to reach the apex of a willow branch. When it accomplished this aim, it would seed abundantly. It must have been seen, in this condition, by Peter Kalm, who was sent, by Linnæus, to examine the plants of our country. In his journal of March 1749, dated from Raccoon Creek, New Jersey, he observes "Hopniss or Hapniss was the Indian name of a wild plant which they ate at that time. The Swedes call it by that name, and it grows in the meadows, in good soil. The roots resemble potatoes, and are boiled by the Indians, who eat them instead of bread. Some of the Swedes, at that time, likewise ate this root for want of bread. Some of the English still eat them instead of potatoes ; but likewise take the peas that lie in the pods of this plant and prepare them like common peas. Dr. Linnæus calls the plant *Glycine Apios*." It is evident that, the seeds being not much larger than hemp seed, considerable quantities could easily be obtained, to enable them to be gathered and used to any advantage as boiled peas. The tubers are not large, those in the illustration being the usual size ; but they are produced in some quantity on each plant. At times, a plant will produce larger ones than its neighbors do; and, by selection, a race valuable in agriculture might be produced. In the sixth volume of the Proceedings of the Nova Scotia Institute of Natural Science, page 282, a correspondent notes a plant on the grounds of a school-teacher of Halifax, Miss N. Stairs, that produced tubers three ounces in weight, and were 6½ inches in diameter at the smaller end, and 8 inches at the larger.

To the student of morphology and of the behavior of plants, few matters present more points of interest than the one now under consideration. The limited space of this chapter affords the opportunity only of submitting this directing hint. It will be discovered, by the close observer, that there is no need for an insect to enter before the stigma is disengaged from the pocket. It is not disengaged till after some time, as correctly stated by Dr. Gray ;—but they all escape, whether an insect enters or not. A singular error also seems to prevail in regard to the length of time pollen remains potent. Because the pollen matures a day or a few days before the stigma is functional, it does not follow that it is inoperative. It preserves its vitality for an indefinite time. In *Apios*, the stigma receives its own pollen at once on emerging from the pocket in the vexillum. It is strictly a self-fertilizer. Observations on the *Wistaria*, by Dr. J. Gibbons Hunt, made at the author's request, show that the pollen tubes penetrate to the ovula in all the flowers examined,—and the failure to mature is simply a failure of nutrition. On the author's grounds, where flowers are abundant, the *Apios* flowers are apparently not worth the trouble of a visit from insects. No one of any kind has been noted as paying attention to it, for all the delicate wall-flower odor.

The student of historical botany will find the plant rich in material. *Apios* is a Greek term denoting a species of the pea-family now described as *Lathyrus tuberosus*, and which has roots like small pears, similar to those which our plant produces, and which the name *Apios* indicates.

EXPLANATION OF THE PLATE. Portions of the whole plant in various sections, from Woodstown, New Jersey.—1. Stolon with tubers. 2. Upper portion of a branch twining around a willow stem. 3. Rachis from which most of the flowers have fallen by an articulation, and bearing three immature seed pods. 4. Front view of flower, showing the curiously-curven keel and sexual organs. 5. Outline sketch showing back of the vexillum with pocket in which the stigma is held.

WILD FLOWERS AND NATURE.

DANDELIONS.

When the first dandelions took
  On their broad disks the light and dew,
My heart ran truant like the brook
  And had its solace where they grew.

'Twas good again to see them bare
  The lavish glitter of their shields,
Not one can perish but somewhere
  A light is blotted from the fields.

They shed the sunshine as I pass,
  The sunshine lent them from above,
Their glow as ample as the grass,
  But not more ample than my love.

Ah! ever-blended green and gold,
  That mantle all the summer land,
I learn how much the heart can hold,
  How little fills the hand.

RICHARD EDWIN DAY.

APIOS TUBEROSA.—Though *Apios tuberosa* was marked as a distinct genus by Moench, in 1799, Linnæus founded the genus *Glycine* on it,—and it may well be a question, under the laws of priority, why the genus *Glycine* should stand, when the species on which it was founded should be regarded as wholly distinct from it!

THE DOUBLE RUE ANEMONE.—In the 11th volume—1856—of the *Flore des Serres et des Jardins de l'Europe*, by Louis Van Houtte, of Ghent, there is a colored plate of the Double Rue Anemone. It is described as a North American wild flower, introduced by Bartram into English gardens during "the second half of the last century," and from thence into gardens upon the Continent. Whether it is still cultivated abroad would be interesting to know.

As a wild flower, I have twice seen it. Once it was shown to me in Lexington, Massachusetts, and once I found it on Ocean Terrace Hill, in Staten Island, (Richmond Borough,) New York. Those I saw were very pure white, and the outer calyx-leaves much larger than the transformed stamens. So, too, Van Houtte describes his garden variety.

Colonel T. W. Higginson, in the chapter "April Days" of his book "The Procession of The Flowers," gives the following account of his acquaintance with this blossom. Its finder was the husband of Celia Thaxter, also a flower-lover, as all her books, especially "An Island Garden," will show.

"Thaxter had always a gift for wild-flowers, and used to bring to Cambridge the largest White Anemones that were ever seen, from a certain special hill in Watertown ; they were not only magnificent in size and whiteness, but had that exquisite blue on the outside of the petals, as if the sky had bent down in ecstasy at last over its darlings, and left visible kisses there. But even this success was not enough, and one day he came with something yet choicer. It was a Rue-leaved Anemone (*A. thalictroides*) ; and each one of the three white flowers was double, not merely with that multiplicity of petals in the disk which is common with this species, but technically and horticulturally double, like the double-flowering almond or cherry,—with the most exquisitely delicate little petals, like fairy lace-work.

"The next winter Thaxter went to New York for a year, and wrote to me, as spring drew near, with solemn charge to visit his favorite haunt and find another specimen. Armed with this letter of introduction, I sought the spot, and tramped through and through its leafy corridors. Beautiful Wood-Anemones I found, to be sure, trembling on their fragile stems, and deserving all their pretty names, ... Rue-leaved Anemones I found, also, rising taller and straighter and firmer in stem, with the whorl of leaves a little higher up on the stalk than one fancies it ought to be, as if there were a supposed danger that the flowers would lose their balance, and as if the leaves must be all ready to catch them. These I found ; but the special wonder was not there for me. Then I wrote to him that he must evidently come himself and search ; or that, perhaps, as Sir Thomas Brown avers

that 'smoke doth follow the fairest,' so his little treasures had followed him to New York. Judge of my surprise, when, on opening his next letter, out dropped, from those folds of metropolitan paper, a veritable double Anemone. He had just been out to Hoboken, or some such place, to spend an afternoon, and of course his pets were there to meet him. . . . "

As Levi Thaxter had friends on Staten Island, I like to fancy that he may have found the Anemone on the same picturesque spot where I did.

ELISABETH WINTHROP JOHNSON.

BIRDS RETURNING TO THEIR OLD NESTING PLACES.—I wrote you previously about the strange conduct of a female robin in persistingly flying up against windows and pecking them. That was last spring. It seemed to be confined to one robin, for this spring, the same glass-pecker robin is here again. This would indicate that this bird at least returned north to the same summer haunts. I have never heard of such doings among the bird family. Peeping Toms are numerous enough, but not glass-pecking robins. W. C. EGAN.

CALTHA PALUSTRIS, L.,—MARSH-MARIGOLD. This showy little plant, growing in swamps and wet meadows, having long petioled, serrate, reniform leaves, and bearing bright yellow flowers in spring, is worthy of cultivation by persons having ponds or creeks near their homes. I remember once bringing a number of plants from a neighboring swamp, and planting them around a pond in a meadow near the house. When visiting the place the next spring, I was much pleased to find that they had not only grown but were sending up a number of flowers to ornament the place. An English writer informs us that the unopened buds are sometimes used as a substitute for capers. I have two other species of this plant in my collection. When I was a school girl, I noticed, growing in a swamp, near the school house, a variety having longer-petioled, coarser-serrate leaves, with a more open sinus, and bearing smaller, yellow flowers. It was not as handsome a plant as *Caltha palustris*. In 1888, and again in 1891, I collected it at the same place. In 1889 I was informed that the same variety grew at the Paoono Mountain, and was named *Caltha flabellifolia*, Pursh. In 1895, a specimen of the plant, collected at Pott's Swamp, Berks County, Penna., was named and sent to Dr. N. L. Britton, of Columbia University, New York, who informed me that it was correctly named. In 1897, a smaller variety, *Caltha nutans*, Pall. was sent me from Colorado ; it was collected, by Mr. Eby, on a wet part of the mountains near Telluride, where he found it growing at an elevation of some fourteen thousand feet above sea level. AMELIA F. EBY.

Lancaster, Pa.

THE CALIFORNIAN POPPY.—The miles,—the acres,—of wild flowers in bloom in February and March, in Southern California, almost surpass belief. The Golden Eschscholtzias, or Californian Poppies, make not one but many a field of cloth of gold. We have the large one, with its four petals of one unvaried gold ; another, the center of which is of the same sunlit hue, while the borders of the petals are lemon color ; yet another with petals almost white, the color of a child's flaxen hair. They last some time, wrapping their drapery about them in the late afternoon, sleeping sweetly till they may greet the morning sun ; and if a cloud obscures his face, they keep on until he comes in brilliant array. But the loveliest thing about these devoted admirers of the sun is, when their bloom is over we see them no more.

We never have the pain of seeing so much beauty fade, wither and go to decay. The wind takes their ripe petals away, while in the glory of apparent youth and vigor,—they are simply seen no more ; but a pretty seed-vessel appears in their place, the pod elongates, seeds ripen and scatter to develop another harvest of sunbeams. MRS. E. E. ORCUTT.

San Diego, California

MALFORMED LEAVES.—Mr. Timothy Wheeler sends leaves of a crook-necked squash which are folded like a funnel. One would hold a gill of water and the other is beautifully fringed, or rather ruffled, along the edge of the cup. Small cups of this character sometimes occur on cabbage leaves. The morphological conception of the manner in which these cups are brought about is by no means clear.

GENERAL GARDENING.

THE DEATH OF MAY.

In the deep grass the buttercups are fain
To hide their little faces from the rain ;
In the chill lanes beneath a sky that lowers,
The broken hearted May buds fall in showers,
And from the garden where the border shone
The light, the life, the hope of spring are gone. —*Pall Mall Gazette.*

SUMMER SCHOOL OF FORESTRY.—A practical course of study in forestry will be conducted by Yale University, at Milford, Pa., commencing July 8th, 1901, and lasting for eight weeks. The faculty consists of Professors Henry S. Graves and James W. Toumey.

The course is calculated to interest not college students alone, but owners of woodland, farmers, lumbermen, forest rangers, and any one evincing an interest in the subject —women included.

HEDGE OF CALIFORNIAN PRIVET ON GROUNDS OF A. H. MASON, GERMANTOWN

Through the courtesy of Mr. James W. Pinchot, a wooded estate of about 60 acres has been given over for the school's use, and this is supplemented by large forests in the immediate neigborhood. One of the Pennsylvania State Forest Reservations is but a short distance away. The location is said to be very healthful ; and in the establishment of camps for use by those preferring them to boarding-house life, full opportunity will be afforded for two months of bracing, out-door life.

Five regular courses in forestry are offered : "Forest Botany" will embrace laboratory work, field work and lectures. "Silviculture" will be of a more practical nature, and covers a training in the methods of establishing and treating woodlands. "Forest Measurements" will be an instruction in methods of determining the contents of felled and standing trees and of whole forests—the age and growth of individual trees and of whole stands. "Introduction to Forestry" is to make clear what forestry is, its true scope and function in the United States, and will be presented entirely by illustrated lectures. "Forest Protection" will be in relation to fires, tresspass, damage from wind, insects, grazing, torrents and drifting sand.

CALIFORNIA PRIVET.—The gardening world has found that it is about as easy to stop the great world on which we live from going round as to stop the travels of a plant name after it has started on its journey over the earth. The California Privet is a good specimen of this. It is a native of Japan, but got the start in popularity under the name of California Privet, and no nurseryman would think for a moment of changing this name now. It would be a case of confusion worse confounded. It has been found one of the most useful things for ornamental hedges ever introduced to American gardens. It has two especially great merits,—one, that it will hold its own in beauty under very severe treatment from ignorant bush shearing, the other, that it will thrive under a great variety of soils and situations. Few plants will endure summer droughts as this will. The illustration represents a low boundary line on the top of a steep bank on the grounds of A. H. Mason, Esq., of German-

town, where it has been in healthy condition though kept less than two feet high, for several years past, to the admiration of the public using the high road alongside.

PRUNING BROAD-LEAVED EVERGREENS AT TRANSPLANTING. — It is recognized among planters that more risk attends the transplanting of evergreens than deciduous trees. This applies with more force to those of a broad-leaved character, such as the holly, Evergreen Magnolia and Mahonia are examples of. Why this should be is a surprise to many, yet the cause is not far to seek. When deciduous trees are planted, it is either spring or autumn, when they are bereft of foliage. At such times the calls on the roots are not as important as they are when foliage is to be supplied. The evergreen is never without foliage; and it is because of this so much more care is required in transplanting it. There is no reason why so much care should be taken to preserve the leaves, when, by reducing their number, the safety of the tree would be so much advanced. Southern nurserymen understand this; and one and all notify their customers that leaves will be taken off of such evergreens as *Magnolia grandiflora* before being shipped. Northern nurserymen do the same in the case of the holly; and if the rule was to treat all evergreens this way, excepting, of course, those with balls of earth, such as Rhododendrons usually carry, it would result most favorably.

This defoliation could be practised to advantage to some degree on coniferous evergreens, the foliage of which could be partially removed when they were transplanted.

JOSEPH MEEHAN.

GROWTH OF AN OLD POTATO, by "O.," on page 12, current volume.—I was sorry that it did not occur to you to add, in a note, what I once wrote you. While digging a crop of wild potatoes, once, I found one old potato, that had just raised one crop, perfectly sound, so I carefully housed it for the winter, planting it the next spring by itself, so as to know the result, and, strange to tell, it raised 125 potatoes, a much larger crop than the first.

Moscow, Vt. T. WHEELER.

A GOOD BEDDING BEGONIA.—Few bedding plants are more satisfactory, in most respects, than the several varieties of the Vernon Begonia. They grow thriftily and compact, making a dense bed of bright green leaves amongst which flowers are borne abundantly and continuously. Sweet Alyssum makes a very pretty edging to a bed of this Begonia.

HALESIA TETRAPTERA.—The *Halesia tetraptera* has been aptly called the Snowdrop Tree, for the individual flowers greatly resemble the welcome Snowdrop of early spring. When they mature, they fall in showers, and the earth beneath seems to have passed through a snow storm. The seeds have four wings, from

HALESIA TETRAPTERA.
White flowers about one-third natural size.

which fact the specific name *tetraptera* is derived. The tree itself grows to about the size of a mature apple tree, and is a pretty ornament for the garden. It is a native of our country south of the Potomac, but is perfectly hardy for over a considerable territory northward.

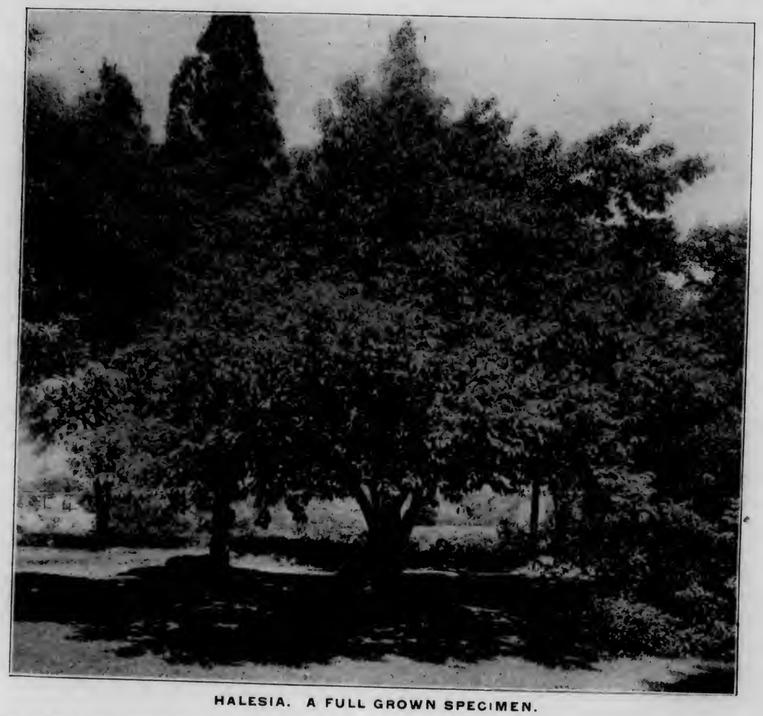
COUNTRY LIFE, — MORAL INFLUENCE OF HORTICULTURE — In an article recently published in a Parisian political journal, *The Rappel*, M. Francisque Sarcey expresses a regret that the working people, who form so important a part of the population in industrial quarters, in the center of Paris, cannot have, in the environs, a corner for a garden in which to cultivate flowers in the place of saloons.

"I do not understand," writes M. Sarcey, "why the prime minister does not urge the railroad companies to run a succession of trains composed of small cars in order to establish a continual going to and fro between the city and suburban communities. It should be well understood that the fares would be small.

I do not say that the social question would be immediately solved. It would lose much of its sharpness, for the workman who has a comfortable home returns to it with pleasure each evening, never dreaming to spend his earnings at the tavern. He finds it more agreeable to cultivate his flowers and to inhale their perfume than to poison himself with the adulterated alcohol with his companions.

In London, when evening comes, the whole population mounts the train and returns 'home.' Is it impossible to do here what is so easily done there?"

We should know, too, how to approve the vow formulated by our excellent colleague and do wish that he might apply other authorized representations of the Parisian press, conceal-



HALESIA. A FULL GROWN SPECIMEN.

ing nothing that would relieve above all the domain of Utopia.

In fact, it is difficult to pass an ordinance of this kind, considering how the Municipal Councils of Paris, and consequently the General Council of the Seine, where the premier constitutes a large majority and use every means to keep the population enclosed, to retard the construction of the famous metropolitan railroad, or more or less trammel the junction of lines leading out of the city; railroad companies never seemed disposed to favor the exo-

dus of Parisians to the suburbs, and, in the environs of the capital, it takes an hour to traverse fifteen kilometres; dwelling houses with gardens are also more expensive near the suburbs than in the outskirts of Paris,—besides, the workmen who would wish to live in the country would be obliged to leave home about five or six o'clock in the morning and return at night, leaving little time to cultivate flowers or even to look at them!

However, we are convinced that the progress desired by M. Sarcey would have an immense moralistic consequence, and that the conception is not at all exaggerated. Not only the workingman would be better for it, and stronger by breathing a purer air, but he would have a better use for his leisure, and be in better trim to pass a public house than when he is shut up in the city. When he has a garden at home, flower seeds sown and cared for by himself, his tastes lead him not only towards nature, but to his fireside,—to his "home," and these are affections of a high and civilized degree. Alcoholism would lose much power, and hygiene, also morals, gain still more; health and morals have between them a straight road.

BERBERIS REPENS--THE CREEPING BARBERRY

Perhaps it will all be realized. What is possible to a certain extent in London, is possible in Brussels; but in Paris, alas! it is only a dream, and a long one at that.

Nevertheless, we must do as much as we can, and, by every means, push it to realism.

Translated from *La Semaine Horticole*, by SARAH D. LANNING.

MAHONIA REPENS.—When the Oregon Grape was discovered, the general aspect was so different from the ordinary forms of the well-known berberry, that Nuttall made a new genus thereof, dedicating it to Bernard McMahon, an enthusiastic botanist and nurseryman, as *Mahonia aquifolia*. Thunberg named another species *Mahonia Japonica*, and George Don named the Rocky Mountain species *Mahonia repens*. Modern botanists, however, take pleasure in splitting up genera and species on very fine points, while abolishing the niceties their forefathers made. Thus it has come about that, in botanical works, there are Mahonias no more. They are all swept back to the barberries again, and our *Mahonia repens* has to be sought for as *Berberis repens*, and go under the common name of Creeping Barberry. It seldom achieves a greater height than a foot—but is remarkably attractive in early spring by its yellow flowers,—and in the autumn by its large purple grape-like fruit. It is an excellent plant for finishing up a belt of shrubbery. The illustration is from a photo kindly furnished by Mr. D. M. Andrews, of Boulder, Colorado.

TWO PLANTS OF DENMARK.—Denmark is a comparatively small country, and so situated between North and Central Europe that it is not to be expected she should have any plants—or, indeed, any of nature's gifts—solely her own. Still, when I have decided to tell about "Two Plants of Denmark," I have done so partly for the reason that these two plants are in some way characteristic of that little country,—or, rather, lend character to two very different Danish landscapes. Also, my knowledge of these plants from their natural habitat might possibly be of some value to those who desire to make use of them in American landscape gardening.

The plants I have in mind are the European Beech, *Fagus sylvatica*, and the Common Heather, *Calluna vulgaris*, two plants belonging to widely different families and suited to very different natural conditions. The former growing over great stretches of comparatively fertile land as a big forest tree,—the latter, a small shrub, covering miles upon miles of country which might by right be termed deserts.

Once upon a time,—thousands of years ago,—the forests, of what is now Denmark, consisted mainly of conifers, the remains of which are still to be found as big trunks and roots in the peat bogs In bogs of newer origin, great oaks lie buried, and their descendants—mostly *Quercus pedunculata*, but also *Q. sessiliflora*—still make up parts, but only small parts of the natural forests, these, nowadays, consisting almost entirely of beech, juniper, and yew, (*Taxus baccata*,) the last two now being the only conifers to be found in a wild state.

The beech forests occupy large stretches of rolling country in the islands, and in the eastern part of the Province of Jutland. This tree seems to prefer the hill tops and the slopes, but it should be remembered that the altitude is nowhere more than about 600 feet over sea level. In the low places, where the ground tends to be swampy or sour, it will give up the field to such trees as elm, ash and alder, and a variety of shrubs. The soil is mostly a gravelly clay, but it is evident that the forests extend farther into sandy regions than into stiff, clayey grounds; and, on closer examination of the soil, or merely by noticing the deposits, where springs issue, it will be found that lime is present in the ground in a good percentage.

The beech is a pretty quick grower,—decidedly so if compared to the oak, and that is the chief reason why the latter always loses in the struggle for existence between those two. Another reason is that the beech is in full leaf while every bud of the oak is still sealed up, and in that manner deprives the oak of the sunlight that it loves so well. The average date of the leafing out of the beech is, in Denmark, the 10th of May.

When the young beech plants are protected against strong winds, and more so if they are growing close together, they will shoot up quickly and grow straight and slim; while, if they are exposed to the weather, they will become crooked and twisted, as they can be found on the outskirts—especially the western—of any Danish forests. Such crippled trees—and also the young plants, probably to the age of about ten years—will keep their dead foliage through the winter and often far into the next season; but this is not the case with mature, well grown trees.

To every lover of nature I wish the joy of a stroll through a Danish beech forest in the latter part of May. The lofty trees, with their yet bright green and half transparent foliage above, and on the ground below a carpet of white and yellow Anemones, purple Hepaticas, blue violets and yellow primroses, with the thrush and other songbirds of the wood, and the sky-lark hovering over the field outside, to supply the music, make it such a feast, that you feel all the more privileged if you had to endure the hardships of a northern winter to gain it.

The heather occupies ground of a description almost the opposite of that on which the beech forests grow. The central part of the Province of Jutland, and all the way west to "Klitterne," (the sand hills or dunes along the North Sea,) consists almost entirely of low plains of barren sand, with a layer of "Ahl" (hard pan) a few inches below the surface. Here and there are large peat bogs, and, in a few places, the plain is broken by hills or bordered by such; but whether it be the plain, the hills or the bogs, the heather clothes it all. On the hills and in the bogs it is not altogether without competitors. On the hills, it is interspersed with *Arctostaphylos*, *Vaccinium*, *Genista*, and even such trees as Oak (*Q. sessiliflora*) and Aspen; but these trees never get to be anything more than stunted dwarfs, looking as if they had been repeatedly sheared on the west side. The wind from the North Sea is the shearer. In the bogs, the heather has to fight for the ground with such plants as *Vaccinium*, (*V. uliginosum*, *V. Vitis Idæa*, and *V. oxycoccos*), *Erica tetralix*, *Andromeda polifolia*, *Empetrum*, *Myrica*, and a few others; but on the sand

plains it reigns supreme, nothing else tries to make a living there, except it be a few very frugal herbs, and such plants as *Cladonia rangiferina*, and other lichens and mosses,—plants that do not expect to draw any nutriment from the soil. It is evident, though, that in the bogs and on the hills the heather finds the conditions the better, even if it has to fight for them, as in such places it will often grow to a height of three feet or more, while on the plain it seldom reaches one foot; and it is safe to say that the cause of this difference is, more than anything else, a deeper soil.

The soil of the plain, as already mentioned, is a few inches of barren sand; that of the hills may be a little more gravelly, and the hard pan does not there come as close to the surface; but there is one thing they have in common with the peat of the bogs, they contain no lime, and lime, if present in the soil to any extent, is sure death to the heather.

The conclusion to be drawn from the foregoing would mainly be this: The beech prefers a gravelly soil, with good drainage and a position sheltered from strong winds, while the heather will manage to live in almost any kind of soil, be it ever so poor or ever so shallow. It is not particular, neither, as to moisture, growing, as it does, on dry hilltops as well as in wet bogs; the bleakest winds and the coldest winters have no terrors for it; but lime, apparently a necessity for the well-being of the beech, is a poison to the heather.

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Herewith is a picture of a scene in the garden of the late James W. Elwell, of Brooklyn, formulated by his excellent gardener, James Boyle, taken in 1896. The garden gave pleasure to thousands of citizens as well as to its liberal garden-lover, then in his 75th year. Who would believe that not only has he passed away, but that brick and mortar is now the boast of the plot on which so much natural beauty once proudly dwelt? But such is the fate of suburban gardening!

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NEW OR RARE PLANTS.

THE CORK-FIR.—Much interest has recently attached to accounts of the large amount of cork that may be obtained from the bark of *Abies Arizonica*. Dr. Masters says that it is merely a variety of the well-known *Abies lasiocarpa*, and that *Abies bifolia* and *Abies sub-alpina* are synonyms. But he adds the caution that, what is generally grown in gardens as *Abies lasiocarpa*, is wrongly so called, it being really a form of *Abies concolor*.

UNCOMMON WATER-LILIES.—Probably a few notes on some of the novelties and recent introductions in Water-Lilies might interest the readers of MEEHANS' MONTHLY. I will briefly mention those which I have tried and found worthy of recommendation:

Nelumbium Shiroman, the new double white lotus, is very desirable. *Nelumbium roseum plenum*, double red, is also good.

Of the newer French hybrid Nymphæas, I regard *N. gloriosa* as very fine. *N. Ignea* and *N. flammea* are also fine, but propagate slowly.

There are several nice, new, hardy American Nymphæas. I will mention four: *N. candidissima rosea* (*N. alba candidissima*, *N. odorata rosea*) is very choice. For free and continuous bloom, it has no superior. Flowers are the size of the *candidissima* and of a showy, deep pink color.

N. erecta (*N. odorata alba*, *N. alba candidissima*) is a pure white variety with erect habit, the flower often standing a foot above the water. It is distinct and an unusually free bloomer. *N. constans* (*N. odorata rosea*, *N. superba*) I have cultivated three years. It may be classed with the odoratas, is much larger than *O. rosea*, color a shade lighter than *O. Luciana*—a soft flesh pink. It will produce three times as many blooms as *N. o. rosea*. *N. superba rosea* is a pink sport from *N. superba*. The variety *N. superba* is often confused with *N. odorata* varieties. The true *superba* is a hybrid of *N. tuberosa* and *N. alba candidissima* and has no *odorata* blood in it, but is a distinct type and the largest hardy *Nymphæa* grown. *N. superba rosea* promises to be a rampant grower and free blooming as its parent, while it is the largest hardy pink *Nymphæa* I have ever seen.

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INTENTIONAL SECOND EXPOSURE

great interest and pleasure. They were in pots and plunged three or four inches below the surface of the water. To make the appearance the more natural, the whole thing may be set to the upper rim of the barrel in the ground. A Water Hyacinth may be added, a "Parrot's Feather" and a few other water plants, to render the whole more interesting. The Papyrus, or Umbrella Plant, does well in such a place and breaks the flatness.

DOUBLE SCARLET GEUM.—Among the freaks that nature loves to indulge in, it is remarkable that she has never tried to present us with a double-flowered strawberry, so far as the records of flower gardening show. But, in the Geums, which form a family closely related to the strawberry,—having dry-awned fruit, instead of pulpy ones,—we have a fine, double

CEUM COCCINEUM, FL. PL.

variety in the scarlet-flowered *Geum coccinea*. The London *Journal of Horticulture* describes it as one of the gayest ornaments of the flower border, and that it produces a succession of bloom from spring to fall. It has been introduced to American gardens and promises to become popular.

AMARYLLIS HALLII.—Your correspondent, Mrs. F. N. B., on page 43, remarks that she has found not the slightest allusion to the above plant in any periodical she has had access to. This is not so much to be wondered at when the facts of the case are told. The principal reason for this seeming neglect of so hardy and beautiful a plant, is, that its proper name is *Lycoris squamigera*, and under this name it is common in commerce, and fairly well known in gardens. My first acquaintance with the plant was as a fine clump grown in the Manning Nursery, and called *Amaryllis Hallii*. Mr. M. told me he got it from New Bedford, from the garden of some sea-faring man who had had it for years and proved it hardy. We were not content before adding it to our collection, where it flowers annually in early autumn and is a very pretty, as well as an uncommon sight.

Lycoris squamigera will be found figured in "Garden and Forest" for 1890, page 176; and, if Mrs. F. N. B. has access to this volume, she will find that there is a figure of the plant and a cultural note that accords with her experience. It is equally as beautiful a flowering bulb as the lovely *Amaryllis Belladonna*, which is not at all hardy, and does not bloom with any regularity when grown in the greenhouse, and it seems a pity that the name should have to be changed from *Amaryllis* to one not half as euphonious or well known.

So. Lancaster, Mass. E. O. ORPET.

[To the above instructive note may be added that this is not a change of name for which botanists are answerable, as they are in so many cases. The plant was never known to them under any other than *Lycoris squamigera*. How the title of *Amaryllis Hallii* originated, is not on record.]

FRUITS AND VEGETABLES.

ASPARAGUS CULTURE.—It has but recently been suggested that it might be profitable to select the sexes in order to have the best results from asparagus culture. MEEHANS' MONTHLY was under the impression that the suggestion was too recent to have been actually tested in America. It was noted, with some surprise, on reading a professedly practical work on vegetable growing in the vicinity of New York, that this was recommended as

an ascertained and unquestioned fact. It was recommended not to plant the permanent bed till there had been an opportunity to select the male plants,—or to weed out the female plants from permanent beds of seed-sown plants. When, however, the reason for this was given, that the female plants exhausted the roots by reason of bearing berries, it warranted a suspicion that the advice was based on this speculation rather than as the result of a practical experiment. Nothing has been better proved in the whole round of modern discovery in plant life, than that plants are wholly male merely because they have not as high a vital power as the female. The female asparagus, under this law, should bear berries because the plant has a greater life-power than that of the other sex,—and this should hold good with the berry-bearing capacity thrown in. After all, there may not be so much difference as to make attention to it a matter of profit to the market grower. But careful experiment is desirable

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PRUNING TOMATOES.—Southern growers of tomatoes for northern markets practice a peculiar system of pruning. All the lateral branches are pinched out as soon as they appear, thus making a vine of a single, upright stem. When three or four clusters of fruit have set, the top of the vine is also pinched out, thus stopping growth entirely. It is claimed for this rather drastic treatment, that it makes larger and earlier fruit, and that it tends to make the crop mature all at once.

—*Country Gentleman.*

PURSLANE SALAD.—Our common Purslane, "Pusley," as it is termed in the vulgate, is such a persistent weed in our country, that no thought is given to it as of any use in the service of man. In the Old World, where there is trouble in raising it, the list of valuable garden vegetables is hardly regarded perfect without it. *Gardening Illustrated* has this to say:—

"The seed of Purslane is black and shiny and about the size of Rapeseed, which plant is now so much used for salading in the market in place of hot and dearer Mustard. When from three inches to four inches in height the little plants are cut close down, and in that way washed and cooked as Spinach is. The water is then poured off and the yolks of a couple of eggs are mixed and beaten up with the Purslane, and thus served to table in a semi-liquid form. Those in search of a variety in vegetables may well try Purslane cooked in this way. The young plants are also quite a pleasant addition to salads, especially to mixed salads, toning down, because so mild, the hotness of Mustard and Cress. Purslane may also be sown in drills outdoors, the plants being cut over very much as summer Spinach now is. They make, then, a second growth."

HANDLING FRUIT FOR MARKETS.—One of the difficulties in fruit growing for market is the difficulty of getting the extra number of hands required in the fruit picking and fruit handling season. For this reason, more money is usually made by those who grow on the dearer lands near large cities than on cheaper tracts in less populous places. California is experiencing this trouble as well as the East. Last season it is said that only by the temporary employment of Chinese and Japanese could the crops have been harvested. The papers assert that even kid-fingered dudes were induced, in some instances, to turn in and help,—and one of them humorously hits off the situation thus:—

"He's banished his standing collar
And laid by his evening suit,
And all through the summer season
He's going to gather fruit."

IMPROVED CORN.—If the man who makes two blades of grass grow where only one grew before is, as the political economists tells us, a benefactor of mankind, the one who introduces a variety of corn on a stalk that has three ears as good, where formerly only two grew, should be equally honored. The "Three-eared Corn," introduced by the John A. Salzer Seed Company, of La Crosse, Wisconsin, is the variety in question.

THE GARDEN CITY APRICOT.—The Garden City Apricot is a new variety, which has recently originated at St. Catharine's, Canada, and is very promising, both by reason of its beauty of appearance, excellent quality and fine size. It seems to be also hardy and productive.

—*Canadian Horticulturist.*

BIOGRAPHY AND LITERATURE.

THE JOURNEY OF LIFE.

We lie along in gay luxurious ease
The full vine mantles o'er us, and our pillow
Of mingled moss and flowers ; the hum of bees
Sucking the dew of roses, and the willow
Now hung in downy bloom, and clothed in yellow,
Comes like a drowsy zephyr on the ear,
And the clear-flowing fountain murmurs mellow,
And airy birds in mazy circles veer,
And all seems fair and bright as some celestial sphere. PERCIVAL.

GOETHE AND BELVEDERE.—Mr. C. Forkert, Ocean Springs, Miss., writes :—"MEEHANS' MONTHLY, is always welcome, but the April issue, with the article and illustrations of Goethe's connection with the Gardens of Belvedere, is charming, and brings before the memory of the writer delightful pictures impressed long ago. The pictures are truthful presentations of the scenes. It is regarded as essential to the education of the best class of German gardeners that they spend some time in garden establishments such as this. In most of the establishments of the nobility in the Old World, are extensive glass houses where large specimens of oranges, Acacias, myrtles, Melaleucas, Eugenias, Azaleas, Camellias, and such like are housed in tubs to form winter-gardens and to add to the pleasure ground an ornament in summer. Figs, coffee trees, and other plants of commerce afford instruction with pleasure, and the one described by friend Rothe is one of the most renowned of these famous establishments in Fatherland. I desire to shake hands with Mr. Rothe, say 'adieu and please come again.'"

THOMAS CONRAD PORTER. — The death is announced of Dr. Thomas C. Porter, the well-known botanist and Professor in Lafayette College, Easton, Pennsylvania. He was born at Alexandria, Pennsylvania, January 22, 1822, and died on the 27th of April. He ranked as a high authority in the botanical field, as well as a broad student in most branches of natural science. His great ambition was to publish a Flora of Pennsylvania, for which he devoted years in gathering material ; but though the State was ready to respond, no arrangement satisfactory to Dr. Porter could ever be made. He was the author of the first "Flora of Colorado," and of many other high class botanical papers. Dr. Torrey endeavored to honor him by naming a pretty genus of *Lobeliaceæ*, *Porterella*, for him,—and botanists in many ways indicated their respect and regard. Aside from his scientific acquirements, he was a man of high culture, and had, to a great degree, the gift of poesy. In this line, his friends have often regretted that he did not give the muses freer rein. Dr. Porter may be classed among the great men of the past century, and his loss will be severely felt and not readily replaced.

NOTES ON THE USE OF NITRATE OF SODA.—This is a pamphlet, prepared by R. M. Winans, and published by John A. Myers, of 12 John Street, New York, apparently for free distribution. The value of nitrate of soda in pushing forward garden crops is well understood by practical men. This treatise gives valuable information in detail for the various kinds of vegetables, and will be a valuable guide to the cultivator.

SHIP TIMBER OF THE ANCIENTS.—An English paper says :—"Noah's Ark is generally supposed to be the earliest ship of which we have record ; but, says *Engineering*, there exist paintings of Egyptian vessels immensely older than the date, 2840 B. C., usually assigned to the Ark, being, indeed, probably between 70 and 80 centuries old. Moreover, there are now in existence, in Egypt, boats which were built about the period the Ark was constructed. These are, however, small craft, about thirty-three feet long, seven feet or eight feet wide, and two-and-a-half feet to three feet deep. They were discovered six years ago by the eminent French Egyptologist, M. J. de Morgan, in brick vaults near Cairo, and were probably

funeral boats. They are constructed of three-inch Acacia and Sycamore planks, dovetailed together and fastened with trenails. They have floors, but no ribs, and though nearly 5,000 years old, they held rigidly together after their supports had been removed. These boats may be considered side by side with the better-known, but much more modern, Viking ship, which is now to be seen in a shed at Christiania. This craft was discovered in 1880 in a funeral mound, so that we owe both these existing examples of extremely ancient ships to the funeral customs of countries so dissimilar as Egypt and Norway."

The Sycamore, referred to, is probably a fig, *Ficus Sycamorus*—and the Acacia is the Lebbek recently illustrated in MEEHANS' MONTHLY. As to the boats being older than Noah's Ark, that may be a question. The world is recorded at that time to have been densely populated as well as hugely wicked,—and must have had boats, certainly,—but when these millions of people met a watery grave, and were carried away so completely by the flood, that not one single skeleton has ever been found, it is hardly likely that any boats could have survived even in a funeral vault or mound.

PLUMS AND PLUM CULTURE. — By F. A. Waugh. Published by Orange Judd Co., New York. This work is devoted to plum culture east of the Rocky Mountains. The botanical classifications of the supposed species, and the groups under which they are arranged for cultural purposes, are fully explained. Then we have the history and descriptions of the popular varieties, with illustrations to enable the plum-culturist to identify them. A chapter is devoted to the methods by which the plum is propagated,—and the comparative value of the various methods are discussed. Orchard planting and general culture are fully treated. The subject of pollination, not discussed in older pomological works, is also given a full chapter ; and the diseases of the plum receive special treatment, as well those following attacks as those which coming from fungus action—not "fungous," as Prof. Waugh expresses it. These subjects are, in a measure, in their infancy, and one must pardon points made as positive facts that might possibly be questioned. When, for instance, we are told that the Curculio "punctures the skin of the plum with her snout, and, in the puncture, she lays her eggs," one might be tempted to ask, why she should take so much trouble when she could make one job of it by using her ovipositor instead of her snout.

The book will be of much value to all taking a special interest in plum culture.

DIE SCHOENSTEN TANDEN FUR DIE SCHMITTBLUMEN,—UND GARTENFLORA.—Published by Gustav Schmidt, Berlin, Germany. Lovers of hardy garden flowers, who can read German, will appreciate this handsome work. It gives beautiful colored plates of hardy garden flowers and varieties, with a full page description of them. A novel feature is that the plates and description are on separate pages, and unbound, though in paper covers, with four subjects to each part. As the work proceeds, the plates and text can be all arranged alphabetically, as in a card catalogue.

GENERAL NOTES.

THE WATER HYACINTH IN FLORIDA.—It is thought that an effective method has been discovered for destroying the "Water Hyacinth" that grows so abundantly in the St. Johns River (Fla.) and its tributaries, and is such a great hindrance to navigation. The method employs a chemical preparation of secret composition prepared in New Orleans. It is used by means of a spraying apparatus, and not only kills the plant, but disintegrates it, the residual material falling to the bottom.

Winter Park, Fla. THOMAS R. BAKER.

[It is to be presumed that the discoverer of this preparation has satisfactorily proven that it will not harm the fish, which forms one of the principal foods in Florida.

Cows—and even the provincial "razor-back hogs"—appear to have a method of destruction all their own, as they wade along the edges of the stream, ravishly feeding on the Hyacinth and other water greens ; but they simply munch the tender, fleshy tops, while the roots remain, a black, fibrous mat.

A few dried clumps of these roots, left on the shore by receding water and sun dried, recently attracted the writer's attention and a thought occurred that the green plants properly stacked and composted with sand and allowed to decay

for a period would make an admirable fertilizer for cultivating the many plants which delight in a light but rich soil of a peaty nature. The plants could be collected by means of an adapted dredge, and the expensive work perhaps turned to profit.

To an observer unaccustomed to the sight, the enormous quantities of the Water Hyacinth floating and banking up along the rivers and in water nooks is very interesting in many ways; while it proves such a dangerous nuisance and unwelcome sight to navigators in those waters. In groups, they cover areas of from less than a foot in diameter to acres in extent; but the small groups frequently hold the greatest danger for the small boats. Logs or snags become concealed in the dense foliage and roots, and the wary pilot keeps clear of every stationary piece which in running or tide water would indicate a dangerous obstruction. A very light frost kills the tops of the Hyacinth but apparently without harming the roots.]

WEATHER SAYINGS.—A common saying, in the Eastern States, is that, if the Woodchuck or ground-hog, as the creature is indifferently called, comes out of its hole on the 2nd of February—Candlemas or Purification Day—and finds the sun shining, it would understand that it had started out six weeks too soon, and retire for that period. How these notions start, is always an interesting question. It was brought to our country from Germany, only the little badger, *Ursus meles*, was the weather prophet. The coincidences between sun or shadow on the "ground-hog day," and the subsequent weather for six weeks, are often so curious as to make some people regard the matter seriously.

FUNGUS AS A MAKER OF POTATOES.—Many wonderful tales are told about the work of the lower orders of fungi, known as bacteria. We cannot live without them; nor can we live long wi h them. It is becoming a hard case. According to a London newspaper:—"It was known that the roots are attacked by a fungus, the *Fusarium*, and when M. Bernard sowed potato seed in soil sterilized by this fungus he discovered that the roots had no potato tubers on them. It seems that the normal potato plant does not yield potatoes, which are a result of the *Fusarium*. This agrees with the observation of Clusius, who, long before Parmentier introduced the potato into Europe, found it did not yield tubers at first. The soil, it seems, had not been invaded by the *Fusarium*."

One might suppose that, when Raleigh brought the tubers from Virginia to England, the potato *Fusarium* came with them; and, further, as they have species of this genus of fungus already abundantly in English earth, they did not soon find out they were as good at the work as the fungus from Virginia.

RAMIE. — Australian papers say that the Ramie plant, *Bœhmeria nivea*, thrives so well in that part of the world, that cultivators are about to try it for fibre for lace-making purposes. That it will grow and produce delightful fibre, from which articles as fine as cambric can be produced, is well-known in America,—but no machinery for cleaning the fibre cheaply has been invented.

ELECTRIC CURRENTS IN PLANTS.—*Phytolacca electrica* is the botanical name of a plant which is capable of giving electric shocks. When its stem is broken the hand receives a severe shock like that given by an induction coil. The true electric nature of this plant is proved by the influence it has upon the magnetic needle, which is sensibly affected by it at a distance of six yards. Birds and insects alike avoid settling on it. The energy of its action is, says *Indian Gardening*, greater during the day than at night, and it increases to a marked degree in storms. It appears from the investigations of Wartmann that most plants show traces of electricity; the currents are feeble in flowers, but in some fruits and grain they are very marked.

ROYAL DIGESTION.—The truths of history are often taught in a funny way. King Henry VIII of England is said to have died from eating too many strawberries,—and the Emperor Frederick of Germany, from eating too many cantaloupes. Numbers of small boys around our melon patches would laugh at these kingly stories if the owners would give them a free gorge over their tract.

PHLOX MACULATA

Lith. Bot. Mag. Boston Monthly by J. Prang & Co.

PHLOX MACULATA.

SPOTTED PHLOX.

NATURAL ORDER, POLEMONIACEÆ.

PHLOX MACULATA, Linnæus.—Flowers in a thyrsoid or oblong corymbose panicle. Stem roughish, spotted with dark purple; upper leaves ovate-lanceolate, acuminate; lower ones linear-lanceolate. Darlington's *Flora Cestrica*. See also Gray's *Manual of the Botany of the Northern United States;* Chapman's *Flora of the Southern States;* Wood's *Class Book of Botany*, and Britton & Brown's *Flora of the Northern United States and Canada.*

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appears in the picture, it gives no idea of its beauty in the meadow as presented on that bright summer day.

Though closely related to *Phlox paniculata*, *Phlox maculata* has done nothing towards giving variety to the flower garden as its sister species has ; but there is considerable variation among individuals of the species, especially when growing in different geographical localities. Species have been suggested for some of them, and *P. pyramidalis*, *P. reflexa* and *P. penduliflora* appear among its synonyms. Indeed, the *Phlox suaveolens* of Aiton has commonly been regarded as not essentially different, and was reduced, by Michaux, to a marked variety under the name of *Phlox maculata* var. *candida*, which reference seems to have been accepted by modern botanists. Michaux could only see that it did not grow so tall as the typical species, had spotless stems, and bore white flowers. Nuttall, indeed, hardly considered it worthy of varietal importance. He says, in his *Genera*, "*Phlox suaveolens* is nowhere to be found wild, and appears to be nothing more than a white-flowered variety of *Phlox maculata*, probably raised from seed, as the spotted stem of *P. maculata* is by no means invariable." It appears, however, that the original plant of the white form was sent by Bartram to Peter Collinson, and undoubtedly sent as one of America's genuine wild flowers. Subsequently, Don notes, that *Phlox suaveolens* is "native from Canada to Virginia in meadows." The flowers, as the name implies, are somewhat sweet-scented ; but this property is found in the white-flowered forms of other species. Jacquin, who gives a very good picture of our plant in his *Hortus Botanicus Vindebonensis* (Vienna Botanic Garden), and describes the flowers as having a reddish-purple limb with a violet tube, notes that they are also sweet-scented.

These points are referred to here, as the study of variations has a new interest to botanists since theories of evolution have been presented to us. Herbarium specimens show wide differences among specimens, and it is not at all impossible that permanent differences may yet be observed, elevating some of the forms to specific rank. That intermediate forms are found, may be said of many things conceded to be distinct.

The distinctive character of the *Phlox* has always been striking to the European student of American wild flowers. Peter Collinson, over a century and a half ago. explaining to Bartram that Solander, who did much of the work on Aiton's *Hortus Kewensis*, had neglected to report on some of Bartram's plants sent to him, says : "Dr. Solander is a strange, idle man. I cannot get thy spring specimens from him is the reason thou hearest nothing from me about them. It is wonderful to see the fertility of thy country in Phlox and Viburnums." The *Phlox suaveolens* was probably in this lot, as the date of its introducton to English gardens is fixed at about this time.

It has been noted that, though the Plinian name *Phlox* is evidently of Grecian origin, the great writer on Grecian plants, Dioscorides, makes no mention of such a plant in his work. But though what Linnæus has denoted as *Phlox* is a distinctively American family, had it been Grecian, Dioscorides would probably have overlooked it. He described plants from a medical standpoint.

In special points of beauty *Phlox maculata* has many features of interest. The purple and green spotted stem, pretty as it appears within the unaided vision, is still more pleasing when examined under a pocket lens. The regularly-changing form of the leaves, from the root leaves to the floral bracts, is a good illustration of the law of harmony that the principles of beauty call for. The lower series are long and narrow, and taper gradually to a point. The successive series shorten and become gradually wider at the base. This tendency is more strongly emphasized from series to series, until the final result is an almost orbicular structure with an apiculate apex. The slender tubes of the corolla follow in the same line of development. Long and narrow at first, the broad and almost orbicular lobes of the limb are finally reached. As a specimen of variety and yet harmony in the productions of nature, few better illustrations could be afforded than in *Phlox maculata*.

Dr. Asa Gray gives as its general locality and geographical range "rich woodlands and along streams" from north Pennsylvania to Iowa and Florida.

EXPLANATION OF THE PLATE.—1. Lower portion of the stem of a plant from Montgomery County, Pennsylvania. 2. Upper portion of the same flower stem.

WILD FLOWERS AND NATURE.

THE EVENING PRIMROSE.

"A tuft of evening primroses,
O'er which the mind may hover till it dozes ;
O'er which it well might take a pleasant sleep,
But that 'tis ever startled by the leap
Of buds into ripe flowers." KEATS.

PHLOX MACULATA.—While considering the subject of Phloxes, particularly in connection with *P. maculata*, it is interesting to note that not one seems to have had any place either among the Indian races or our own in the list of medical remedies. The family can claim credit for beauty only, and in no way to the material wants of man.

After all it may well be a question whether beauty in itself may not be classed among physical wants and medical remedies, and the *Phlox* may have its useful office here. Education is more successful when conducted amid pretty surroundings than in uninviting buildings - and flowers for the sick in the hospitals have been ranked among the best remedial measures.

APPEARANCE OF THE KATYDID.—Mr. W. C. Egan, of Egandale, near Chicago, has kept a record of the first appearance of the Katydid on his grounds, for several years past, that may be useful for comparison elsewhere, and is otherwise interesting in showing the dates to be very similar each year :

1894—First heard, August 1st.
1895— " " July 29th.
1896— " " July 29th.
1897— " " August 3rd.
1898— " " July 28th.
1899— " " July 27th.

WHITE BIRD'S-FOOT VIOLET.—A correspondent from Yadkin Valley, South Carolina, says : "Have you ever seen a pure white *Viola pedata?* I found several plants, a few days ago, growing in a group of the usual variety with a few parti-colored ones also."

HABITS OF THE ROBIN.—In the May number of MEEHANS' MONTHLY, the "Habits of the Robin" was of special interest to me, having witnessed the same thing described, a few weeks ago, with a few exceptions. The shades are all light yellow, and, while the robin pecked at the several windows under porch cover, she usually confined herself to one ; and, even when the windows were left open, she flew to the upper panes. When chased, she disappeared for a short time, only to return and resume her peckings. Much to our surprise, after a few days' absence, she returned and has built her nest on the vines overhanging the front steps of the porch. Her mate has never been seen, and, undisturbed by the glare of the electric porch-light at night and the frequent passing of persons during the day, she remains quietly in her nest. She must know we love the birds. D.

Germantown, Philadelphia.

[In addition to what the lady records above, the writer of this was interested in watching a robin pecking at and tearing green maple leaves near its nest. Subsequently, it was seen on the ground, acting the same with immature green maple seeds—and then hopping around and tearing the fronds of maiden-hair ferns, and the leaves of other plants in pots. No use seemed to be made of this green-leaf-tearing piece of work ; and no explanation seems ready at hand.]

THE BIRD'S-FOOT VIOLET.—In *Viola pedata*, the Bird's-foot Violet, we have one of the handsomest of the violet family. It is widely spread over the Atlantic coast territory of the United States—its bright blue flowers being among the earliest to welcome the advent of spring. The annexed engraving is from a photo kindly furnished by Mr. C. E. Pleas, of Chipley, Florida. It is so remarkably vigorous in that part of our country that Mr. P. styles it "variety *Magnifica*." The name *pedata* gives the origin of the popular name of

Bird's-foot. Very common in Virginia is a form called, in the botanical books, *Viola pedata var. bicolor*; that has the two upper petals of a velvety plum color as if it were a kind of pansy. Indeed, it is often known as the Pansy Violet. The peduncles are shorter than the leaves, and it is quite as well worthy of specific distinction as many other forms of violets. But it so happens that it was this particular variety that Linnæus seems to have had in mind when he established the species, and, according to modern notions of strict conformity to the priority of names, regardless of consequences, it would be this blue form now illustrated that would have to get the new name.

BLUE BIRD'S-FOOT VIOLET, VIOLA PEDATA.

BOTANICAL NOTES FROM ONTARIO.—A number of years ago, a very remarkable growth of a common weed plant was dug up near here from among the grass growing near a rail fence enclosing a cultivated field—*i.e.*, an abnormal specimen of *Cynoglossum officinale*. The instance alluded to, instead of the ordinary numerous stalks or branches, had one enlarged stem from which the numerous flowers grew; each flower, instead of being on a raceme, was attached to the main, column-like stem by a short peduncle. Just below the attachment, grew a small leaf (lance-ovate) where the bracts or stipules are usually situated.

There was also a mass of immature flowers at the summit of the tall, gradually tapering (hollow) stem, which was about twenty-two inches high.

To an observer, the suggestion was made that the major part of the leaf-substance had been converted into stem material from some accidental or inexplicable cause.

The whole contour of the plant at once suggested a resemblance to the engravings one has seen in books of the celebrated Porcelain Tower of Nankin (China).

If the cause of the abnormality was a bruise or wound, as from erosion of mice or insects, or from a stone bruise (as a heap of gathered boulders existed near to the spot where the plant grew), in some such way might "lesions" have been formed, as in the ordinary process of grafting and budding. (?)

The essential botanical characters of the flowers were unchanged. It would seem that the chlorophyll of the ordinary large leaves of the species had taken the form of stem substance or fibre material.

A portion of the stem of this "curio" is believed to be still among the books and papers of the writer of this.

Occasional deviations of forms of plant growth, in wild nature, termed "coalition" or "centripetence," have been met with, by the present scribe, in dandelions and in pasture thistles, that may be suggestive from a morphological or biological standpoint; also peculiar growths of the common dandelion, whereby two or three scapes with their capitate heads of flowers have coalesced or been, as it were, "soldered together." These instances are mostly met with on or at the edge of paths used by cattle or horses, etc., to a water supply or on much frequented walks near to dwellings. An instance was lately found near here and a photograph taken of a coalescence in heads of *Cirsium lanceolatum*; and another

instance of unsymmetricality was seen in a group of the large garden Sunflower, *Helianthus annuus*, in which a number of ray or strap-shaped flowers grew in three lines (among the disc florets) radiating from the centre to the circumference of the large floral head!

There is much room for contemplation and commentary as to the cause and permanency of the peculiarly green striped and green "blotched" corollas of the white flowered Trillium. About three per cent. of the blossoms of this species are annually thus distinguished in this locality (*T. erythrocarpum*). Some instances are met with in which the flower is almost entirely green, the only white part being a thread-like line on the edge of the petals. It is believed that Mr. James Goldie, Sen., of Guelph, Ont., Canada, has a number of these Trilliums transplanted into his extensive arboretum at Guelph. A number of years ago, the writer of these lines met with a specimen of (as it was believed) *Trillium sessile* that had the unusual peculiarity of the growth of a second edition of its flower from the centre of its first blossom—a prolongation of the floral axis from the pistil to the upbuilding of a second developed Trillium, stem and green leaf, as if for a second-story house! This specimen was preserved during a number of years, but on account of few people around here taking interest in such objects, was ultimately lost.

In some of the books written by the evolutionist author, Grant Allen, it was surmised that the green-flowered Trilliums evinced a reverting to the ancestral type.

Botanists of some local fame have occcasionally visited this district, Brant, Norfolk, and Oxford counties, Ont., Canada, and have asserted the region to be rich in its botanical wild garniture. The following rather rare plants have been gathered by some of the collectors referred to:

Viola pedata, *Castilleia* (Painted Cup), *Collinsia verna*, *Gillenia trifoliata* (Bowman's root), *Sabbatia concinna*, *Cheirolirium luteum*, *Lithospermum canescens*, and *L. hirtum*, three species *Gerardia*, *Asclepias tuberosa*, *Menispermum Canadense*, *Linnæa borealis*, *Gentiana crinita*, and *G. Andrewsii*, *Comptonia asplenifolia* (Sweet Fern Shrub), *Potentilla fruticosa*, *Cercis Canadensis* (now rare). Cypripediums and orchids in variety. Three or four species of *Lobelia*, *Nyssa*, *Diervilla*. Dodder (one species).

Many interesting species of wild flowers and shrubs are disappearing because of the deforestation, swamp draining, cattle roaming, tillage, and bush fires.

Many curious instances of albinism in flowers and foliage have been noted in the course of years,—and one species of *Lobelia*, *i. e. spicata*, has been occasionally found twining around taller herbs, as the *Solidago*.

Hatchley, Ontario. WM. YATES.

[The writer of this has shown that, laying aside the conception of phytons or rudimentary plants in vegetable structures, every individual cell is capable of becoming a fully organized plant. In the trunks of many trees, young branches are often formed, originating directly from germinating cells fed by the material in the alburnum. A tree is a republic or organization of cells in which a portion of the individual power is sacrificed for the sake of union. A fasciated stem is, therefore, but a case where the power of union has been weakened, and a number of cells start off on an effort to make individual establishments for themselves. The whole of our correspondent's notes afford excellent points for consideration by those interested in vegetable morphology, which, indeed, is one of the most attractive departments of botany,—and of peculiar value in garden culture.]

DEFECTIVE SILVER MAPLE SEEDS.—It has long been known to nurserymen and others accustomed to tree seeds, that the samara of the Sugar Maple rarely has but the one perfect carpel. The seeds are in pairs, and, if one of each pair is perfect, it is thought a good sample. Occasionally both are good, but this is quite exceptional. The Silver and the Red Maple behave differently, a defective carpel being a rare occurrence. This season, however, the Silver Maple in this section has behaved in an unwonted manner. Instead of two perfect seeds, one is entirely barren, in a large number of instances—in fact, has not formed beyond the merest embryo. Just why this is and why the one carpel of the Sugar Maple should be usually barren, though formed, I am unable to say. The winter past was an exceedingly trying one on trees and shrubs, and may it be that the trees are less vigorous in conse-

quence, and show it in their inability to produce a perfect pair of seeds? J. M.

Germantown, Philadelphia.

THE SNOW-WORM.—Scientific men seldom attempt to show the practical value of the work they do. It is often a long time before this importance is realized—and hence we often hear the question, does science pay? This has often been asked in connection with polar expeditions. Their value has often been demonstrated—and yet the same question is being put day by day.

How valuable even a new fact of seemingly trifling importance may be in widening human knowledge is well illustrated by a paper recently published in the proceedings of the Academy of Natural Sciences of Philadelphia, which simply describes a species of "a snow-inhabiting Enchytræid," by J. Percy Moore. It simply tells of the discovery—by Mr. Henry G. Bryant, one of the famous explorers with Peary in Greenland, but on this occasion ascending Mount St. Elias in Alaska—of a small worm, less than one inch long when in its mature condition, that is born, lives, and dies in perpetual snow. This is all, and what of that?

We may leave Mr. Moore's paper here and recall the fact of the extraordinary abundance of animal life in these inhospitable lands. Fish and sea birds abound in such numbers that man and land animals have no difficulty in preserving life during the long, dreary winters of those regions. It has been accounted for in a general sort of way by the broad statement that "animalcula come down with the melting snow to the creeks and harbors, on which small fish feed, and then the larger on these, and so on through the whole course." But the question has never been answered as it is in this paper.

But how do these worms live? for all animal life must be sustained by vegetation in the first instance,—and it is here that the practical man has to put this and that together. Not only do these minute creatures live in snow, but the lower forms of microscopic plants do also. One species, of a blood-red color, known as *Protococcus nivalis*, is produced in such large numbers that the snow hills often seem as red as blood. Aside from this it is known that pollen may, at times, be borne on the winds many hundreds of miles. The waters of the northern lakes have often been covered with what the unlearned have supposed to be showers of sulphur from the clouds, but in reality by pollen from southern pine forests. It might as easily reach the polar snow caps, and probably does,—while in the short, but florally-brilliant Arctic summers, native pollen would certainly be stored by the snow in abundance. Then there are the gorgeous lichens, which abound to such an extent that the rugged rocks are covered with as many sheets of parti-colored patches as Joseph's coat, giving to the winds a continual supply of spores for the sustenance of the snow-fields' inhabitants.

Who will say all this knowledge is not practical? And yet we shall hear as long as the world endures, of what use can these explorations be?

THE EUCALYPTUS, MALARIA AND MOSQUITOES.—Dr. E. J. S., Dover, Delaware, asks: "According to a statement made in a western medical journal, the Eucalyptus tree, which I believe is a native of Australia, is said to grow in California and Texas and is credited with possessing anti-malarial properties. It is also stated that the tree will keep away mosquitoes. Now, as we are especially troubled with this pest during certain months of the year, I have conceived the idea of setting out several Eucalyptus trees around my farm houses in Delaware. Before doing so, however, I am anxious to ascertain if the Eucalyptus will grow in Delaware (Kent Co. near Dover, about seven miles from the Delaware Bay). The soil is rich and does not contain sand. Any information will be appreciated."

[The Eucalyptus will not live in the winter anywhere where the temperature falls more than a degree or two below the freezing point. Malarial fevers are prevalent, at times, in marshy ground, and mosquitoes breed in marshy places. The Eucalyptus, by reason of its rapid growth, absorbs so much water from the soil as to actually drain marshes of superfluous water, and destroy the breeding pools of the mosquito. Any rapid growing tree would do the same service, though in a less degree than the Eucalyptus, which is a more than commonly rapid grower. But the Carolina Poplar would be a good substitute.]

GENERAL GARDENING.

IN A BEAUTIFUL GARDEN.

And flowers of every hue and scent are there;
The laughing fields are one enamelled bed,
And filled with sweetness breathes the fanning air,
And soaring birds are singing overhead,
And bubbling brooks, by living fountains fed,
O'er pebbled gems and pearl-sands winding play;
One boundless beauty o'er creation shed,
The storm, the cloud, the mist, have hied away,
And nothing dims the bliss of this immortal day.

PERCIVAL.

THE TRIALS OF A LANDSCAPE GARDENER.—In some respects, a good landscape gardener, landscape engineer or landscape architect—whatever he may be called, in connection with the artistic and practical development of landscapes and grounds—occupies an unenviable position, and he may be likened to the pioneers in any great cause where advances are met with distrust and antagonism born of ignorance.

He has, first of all, to show that his work, though closely associated with the pick and shovel, is not of it and has artistic realizations as well as natural and purely mechanical ones. He is a true artist with visionary ideas, largely, which are tempered by the practical molding of nature and brought into living facts. An undeveloped piece of land is seen by him through evolutionary lenses and he pictures the effects which might be produced by grading, planting, arranging paths and drives or altering the course of streams. His first picture is, perhaps, barely more than an outline such as a painter might sketch preparatory to adding the colors and touches which almost put life into a portrait; the development and details are largely the result of study and practical ability, always accompanied by the artistic touch and nature appreciation which belong to a good landscape gardener.

But a small percentage of the public appreciates the qualifications possessed by the landscape gardener; to the remainder he is simply an unusually good gardener, or one who is too much above menial work and desires to theorize. They do not believe he can be on the same plane as men of other professions, and he has to force his way to the front by showing results,—and these do not come quickly, as a rule.

Like any other profession, there are "quacks," to use a meaning popular term, and the true landscape artist must beat down the barrier of distrust which such men create continually. Their knowledge and practice are both limited and they will make any kind of bargain, whatever is best calculated to obtain a good sum for a little work—future results are of but little moment to these transient gardeners.

Where a man is recognized to be master of his profession, he should be hampered as little as possible, especially not before he has opportunity to present his ideas. Expense ought, so far as practicable, be a secondary consideration, just as it would be were a doctor of medicine called in for medical advice. The best should always be the highest aim in any walk of life,—and no one asks to receive value, even in advice merely, without offering full equivalent.

MAGNOLIA TRIPETALA.—The character of the leaves of trees has much to do with the effect that a well-arranged garden can produce. Cut-leaved and fern-like foliage have a charming result in some situations. On the other hand, large, broad leaves give what is generally known in gardening as a tropical effect—this idea probably originating from bananas, cannas, and similar plants that have become associated in our minds with tropical foliage. Of this class, *Magnolia tripetala*, a native of our own Allegheny mountains, is a familiar representative. With the leaves only a casual beholder, unfamiliar with botany, might be pardoned for believing he held a species of banana in his hand. The round head of the tree might also favor the heavy, tropical idea. The illustra-

tion shows a specimen about ten years old. The large, white flowers appearing early in spring are attractive,—but its great charm is in summer, when the cucumber-form purple fruit is densely dotted with its large, scarlet, bead-like seed. Altogether, there are few trees that will afford a greater fund of pleasure than *Magnolia tripetala*.

THE BIRCH DISEASE. — Throughout the whole of the Atlantic States of this Union, we hear of trees of the English White Birch and

MAGNOLIA TRIPETALA.

its varieties dying from some cause not as yet clearly known. Trees of half a century or more old, and apparently in perfect health hitherto, may die in a single season. It appears to have come to us from the Old World. The London *Journal of Horticulture* says:

"In Epping Forest, and in other districts around London, birch trees have been attacked during the late summer by a disease which causes them to die very rapidly. In a portion of the Forest known as Lord's Bushes, thirteen diseased and twenty-four completely dead trees were noted on June 10th, within an area of about one-and-a-half acres. A few were attacked in the Forest in the summer of 1899, but it was not till this year that the disease appeared in such a destructive form. On Chislehurst Common, Hayes Common, and Keston Common no signs of the disease were evident in the early summer, but now dead or diseased trees may be found in great numbers. Trees attacked in a similar manner occur at Walton-on-Thames, by the canal between Weybridge and Woking, at Lewisham, and at Westerham. The disease is probably due to a micro fungus, *Melanconis stilbostoma*, *Tul.*, for it appears on the branches of both living and dead trees. The diagnosis of the disease is almost precisely that of *Valsa oxystoma*, described as the destroyer of *Alnus viridis*, in some parts of the Tyrol. It would be interesting, says Mr. R. Paulson in *Nature*, to know if any readers have observed the disease in the Midlands or in the North of England."

RELATIVE BEAUTY OF HORSE-CHESTNUT FLOWERS. — Individually, all the horse-chestnut species and varieties under cultivation have attractive flowers; yet some do not seem to show as well as others, and are rather inferior. MEEHANS' MONTHLY would be glad to record the observations of its readers in this connection.

THE VIRGINIAN CREEPER.—The Virginian Creeper, *Ampelopsis quinquefolia*, has, in some measure, been overshadowed by its relative from Japan—*Ampelopsis Veitchii*. The latter clings so forcibly to walls, and has such a well-shaven appearance, that nothing better could be desired for that special purpose. The native species has a weight to bear in its heavy foliage and dense blossom branches, and is liable to be torn from its support in violent storms. On the other hand, the American species can occupy important places in landscape gardening that the Asiatic species could not fill, and its merits in this respect should not be overlooked. In the grounds of the Luxembourg, near Paris, the Empress Josephine, who had a fine taste for the beautiful in garden affairs, arranged a number of them to be suspended from tree to tree as festoons, with a very fine effect. These were admired by the writer many years ago, and are probably in existence yet. The past season, one was met with that had been employed to form the roof and drapery of an arbor. The annexed illustration represents it. It not only served the purpose of a cool and otherwise grateful shade, but was so located as to form a pretty connecting link between nature and art in the landscape, which the garden artist is ever on the alert to establish. In the autumn, when dressed in its highest colors, the effect must have been beautiful to the highest degree.

AMPELOPSIS VIRGINICA ON SUMMER HOUSE.

RHUS COTINUS.—The *Rhus Cotinus* has many synonyms. It seems that the more names some plants have, the more popular they become, as, take for example, some of the European grapes—Royal Muscadine, White Muscat of Alexandria, etc. By the way, the Royal Muscadine or Chasselas grows and thrives well in Maryland; I grew it there for a number of years, and it did better with me than the Catawba. Returning to my *Rhus*, it is known under the names of Smoke-tree, Mist-tree, Purple-fringe and Mountain Ash. I do not believe there is one man in a thousand who knows it under its proper name of sumach. One of these shrubs grows in a neighbor's yard, across the street from where I live. It is over twelve feet tall and, in its widest spread of limbs, ten feet in diameter. When in bloom, it is rather disappointing, for its misty appearance is rather mythical and takes a very imaginative person to build up the mist or smoke which seems to exhale from its terminal branches. However, it is a nice, clean shrub, free from all insect pests. I believe it could be improved by having its misty bloom enlarged, still retaining its purple fringe. It does seem that a great big shrub like this ought to have a larger load to carry—something weightier than froth. F. K. STEELE.

NEW OR RARE PLANTS.

VIOLA CUCULLATA, "PINK GEM."—The Pink Violet is a decided novelty, varying from all others in having fine pink flowers. It grows about the same height as the other violets and blooms profusely. It is a variety of *V. cucullata*.

This plant was discovered by Mr. Jos. Meehan, along the banks of the Wissahickon, and is, as yet, little known.

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ERICA VAGANS.—When it was first thought desirable to test the hardiness of members of the heath family in America, the first thought

INTENTIONAL SECOND EXPOSURE

was for the heather of Great Britain, *Calluna vulgaris*, as the species naturally the most northern of all. Several others were introduced, but with little hope of success. Side by side, for many years past, *Erica vagans* has grown and flourished, on the grounds of the conductors, with no difference in their hardiness. The past winter was remarkable for the destruction of evergreens in the vicinity.

ERICA VAGANS.

Not within the memory of the oldest inhabitant has there been such a wide range of injury. Strange to say that while the northern heather has been browned as have been some of the hardiest of our natives, *Erica vagans*, though its native locality is said to be confined to the Mediterranean region, has been wholly uninjured. It has a much more delicate and really heath-like character than the ordinary heather, as the annexed illustration indicates. It came originally to America as *E. vagans capitata*,—the head of flowers being slightly more dense or capitate than the normal form.

THE HARDY FLOWER GARDEN.

Early Wild Flowers.—There are few more soul-inspiring events in the lives of small children—and, indeed, for the matter of that, with children of larger growth—than a visit to the woods to hunt wild flowers when the first few warm days of spring have come. Those who have clumps or masses of trees on their grounds might minister much to this happy event in human life by planting thickly of snowdrops, grape hyacinths, or even the ordinary hyacinths themselves. It is astonishing how the latter plant will increase when the roots are left in the ground for years without being disturbed—and this all the faster for the children being permitted to pluck the flowers according to their own sweet wills.

Rose Growers' Troubles. — The rose season is at hand, and there will soon be the usual inquiries what to do for the leaf-miner, and the numerous troubles that come from blights, mildews, and pestiferous insects. It is useless to advise how to save the horses after they have been stolen. This is a trite and true saying, and it is so with these troubles with the roses. As soon as the foliage gets fairly hardened in growth, spraying with copper solutions should be started at once, and not wait till the enemy appears. Of course, this cannot be continued after the blossoms open, but there will seldom be any occasion for this if the proverbial stitch in time has been taken. After the flower season opens, the rose bug — the big fellow that eats the petals—is the only serious enemy ; but it can scarcely be regarded as serious, as they are so easily shaken off into a shallow vessel of the solution, or of Kerosene Emulsion, that their numbers are easily kept down.

The Lasting Qualities of Single and Double Flowers.—Florists invariably look with disfavor upon single flowers, for they neither handle well nor appear attractive to their patrons. The petals of a single flower fall sooner, as a rule, than those of a double flower, which may be accounted for in the fact that the inner petals of the latter are transformed stamens, and these are more firmly attached than simple petals.

The objection to single flowers is generally confined to those used for cut-flower purposes. No one will deny the beauty and fine form of a well-grown, single pæony ; and even a good single rose reaches the heart of many persons before a double one. Single Hollyhocks, too, are attractive and less formal than the double.

Many persons will not appreciate the reference to the single pæonies, for, strange to say, they are very uncommon. A single tree-pæony is even more rare. The writer considered it a treat to see a number of the latter, recently. Fully expanded, the flowers measured seven inches in diameter—the color, a royal purple.

Peach-leaved Bell-flower.—The number of species of Campanula, or Bell-flower, is very large,—and the greater part of them prove admirably adapted to American hardy flower gardens. The one here illustrated, *Campanula persicifolia*,—that is to say, the Peach-leaved Campanula,—proves to be especially valuable, as it is a continuous bloomer for almost a month. *Gardening Illustrated*, which furnishes the copy for our cut, gives it high praise as an English garden flower ; but it is even more vigorous with us. There are two forms in cultivation — bright blue and pure white. It is a native of Europe and Northern Asia.

CAMPANULA PERSICIFOLIA.

FRUITS AND VEGETABLES.

Figs and Caprification. — In our last volume, notice was made of the beautiful specimens of Smyrna figs sent by Mr. Geo. C. Roeding, of Fresno, California. The figs withered when young, until Mr. R. introduced the insect *Blastophaga* with the male flowered fig, to pollinate them. It was stated, in the notice, that the seeds seemed empty at least, with nothing but membrane in them, as we see in faulty pine and other seeds. Samples were sent to trained microscopic botanists—one thought something like an incipient radicle appeared in a single instance, the other saw more cases of a tendency to form a plumule and radicle. To test the matter practically, seeds were sown, and these have produced plants abundantly. It is clear, therefore, that Mr. Roeding's figs have been actually pollinized, as he believes them to be.

That figs do, however, fruit abundantly under cultivation without the aid of the caprifying insect, is too well known to be disputed, —and "thereby hangs a tale" which it might be well for some ingenious investigator to unfold for us.

Propagating the Date Palm.—A communication is on hand in relation to the Date Palm, based on Professor McClatchie's communication on this palm as being propagated by "suckers or cuttings." No response has been received from the Professor as to how these "suckers or cuttings" are obtained from the plant. It seems better to hold over further discussion until Dr. McClatchie sends in the desired information.

Cassareep.—"One of the smaller items of interest at the Pan-American will be the Cassareep. A food accessory of more than ordinary relish, it has thus far remained a South American delicacy unknown and unhonored in the greatest American Republic. It is a by-product made from the poisonous juice of the bitter cassava which is extracted during the process of making *farinha de mandioca*, tapioca, cassava starch, arrowroot, etc. The root

is reduced to a pulp and the juice extracted under pressure. The fibre is dried in an oven and forms a flour which is called farinha or farina. The liquid contains starch which is sometimes extracted in the form of tapioca. This is done by passing the liquid through a basket-work filter made of bark fibre. After being properly settled, the liquid is decanted or racked off and the thicker portion dried on hot plates. This process causes the starch to assume the familiar flaky form known as tapioca. Tapioca in the globular form is made by dropping the thick liquid through small holes, the drops being rounded in falling by coming in contact with the atmosphere.

Cassareep is then made from the thin liquid by evaporation to a syrupy paste, when malagentes (green peppers) are added. Evaporating is done in two ways, in the hot sun and in an oven. When prepared in an oven, the product is dark in color and somewhat resembles Worcestershire sauce and is called, in some places, tucupy pixuna. As the poison contained in the juice is free hydrocyanic acid, which is extremely volatile and quickly passes off when heated, it is in reality only poisonous in the raw, cold state.

Cassava grows readily in tropical and subtropical countries with little or no cultivation. There are a great many varieties which have not been classified, though the two principal ones are well known.

Sweet cassava is a small bulbous root, fusiform, about the size of a potato. This is used by the natives in some sections as yams are used.

Bitter cassava is much larger, some roots weighing 100 pounds, and is used extensively in the manufacture of the different forms of starches such as tapioca and the common laundry starch. Brazil exports about $5,000,000 worth of these products annually.

With proper cultivation, selection of varieties, hybridizing and with improvements in machinery for handling and manipulating the different products, this industry should develop into a very important business.

Experiments are now being made with a view of growing the cassava root commercially in Florida and some other portions of the United States.

South and Central American countries will be represented in an exhibit extraordinary at the Pan-American to show the food products which are indigenous to those countries. Mr. Fuller intends to show how the people of the United States may add to their bill of fare some very tasty dishes prepared by their neighbors to the southward.

Varieties of the cassava plant will be shown growing side by side from the South and Central American countries and the West Indies."

The foregoing interesting matter furnished by the management of the Pan-American Exposition, may be well supplemented by the following, from the *Volusia County Record* (Florida), showing that the commercial use of cassava in that State is no longer an experiment:

"The starch factory, with its additional new machinery equipments of every description necessary, is a great success, and is crushing up the cassava roots to beat the band. It chews up thirty tons per day, and there is food enough for it up to April. The factory is a perfect success. It is turning out as fine starch as was ever manufactured, or such is the opinion of many persons who are good judges. A full solid car of this starch was sent off last week to market, and another will be sent off this week. It takes about three days to get the finished article after the roots go into the grinder. The Seminole Manufacturing Company, owners of this magnificent plant, have put $70,000 in this business, and every citizen of DeLand is indeed pleased that the company is succeeding so well and is, so far, satisfied with the investment. The company pays $6.00 per ton for the cassava root, and the money is yours as soon as the root is delivered. An acre of land will produce in cassava roots from five to ten tons, according to its strength and the fertilizer used. The sand lands about De Land are admirably adapted to its successful cultivation, and without fertilizer will grow from four to six tons per acre, and it can be grown with less labor than growing a crop of corn. One man can plant, care and gather from a twenty-acre field, and can very easily clear $500 per year from it with no fertilizer. When this can be done there is no occasion for hard times. The company had five hundred acres in the past year, and will plant a larger acreage this year."

Cassava is, botanically, *Jatropha Manihot*, a plant of the Euphorbiaceous or Milkwort family.

BIOGRAPHY AND LITERATURE.

FAIRY FLOWERS.

Next morning, while he passed the dim-lit woods,
Himself beheld three spirits mad with joy,
Come dashing down on a tall wayside flower,
That shook beneath them, as the thistle shakes
When three gray linnets wrangle for the seed.

TENNYSON.

WHAT IS A KINDERGARTEN?—By Geo. Hansen, Berkeley, California. The literal meaning of kindergarten is a child's garden. Mr. Hansen's little book is quite original in the literary world. It is a book of but seventy-two pages, and is devoted to plans and details for working out gardens for children; and the information is so condensed, that an ordinary book-maker could have spread it out over several hundred pages. Any one would willingly pay a dollar and a half for what they get here for half the price. We should like to see the little book in everybody's hands where children have to receive instructive pleasure.

FAMOUS ENGLISH TREES.—An English paper says: "Admirers of Sir Walter Scott will be interested to know that the famous trysting oak in Harthill-walk, in this country, mentioned in 'Ivanhoe,' and beneath the boughs of which so many stirring scenes were enacted, has at last come to the ground. Scott himself refers to the tree as 'venerable;' and, as we may suppose that this epithet was appropriate in the days of Cœur de Lion, it would be difficult to find in England a more antiquated trunk than that which now lies near the scene of its youthful glory. The Duke of Leeds is the owner of the land about Harthill, and we (*Liverpool Post*) are informed that it is the intention of his agent, Mr. W. Mosey, to preserve the relic, have it suitably inscribed, and, with no little ceremony, plant a young tree on the spot. It is very probable that the Duchess of Leeds, who, as the authoress of 'Capriccios,' has become known in the literary world, will interest herself in the matter. The old tree, by the way, was the headquarters of Wamba, the Jester, the son of Witless; Gurth, the thrall of Cedric the Saxon; Locksley, the wonderful archer, and other characters in the immortal romance. From it the letter of defiance was indited to Front de Bœuf, 'signed by us upon the eve of St. Withold's Day under the great trysting oak in Harthill-walk. The above, written by a holy man, Clerk to God, Our Lady, and St. Dunstan, in the Chapel of Copmanhurst.' According to Scott, the tree was but three arrow-flights from Torquilstone Castle, a place which figures largely in 'Ivanhoe,' but of which no traces now exist."

OBSERVATIONS ON THE COLORS OF LEAVES.—Supplement to a former paper on the colors of flowers, by E. Williams Hervey, New Bedford, Mass. Some time since, an abstract of Mr. Hervey's views appeared in MEEHANS' MONTHLY on the origin of color in flowers, especially in regard to what are fancifully termed honey guides. Mr. H.'s facts were valuable. As to the interpretation of these facts, admirers of the "environment" theory quarrel, like doctors, among themselves. In this supplement, Mr. Hervey defends himself against the attacks of his fellow laborers, adding some facts in connection with the coloring of leaves as well as flowers.

BEAUTIFYING TOWN GARDENS.—Under the National League of Improvement Associations, much good work has been done in inaugurating parks, beautifying public gardens, and even in the improvement of private grounds. What has recently been successfully accomplished is well told in a prettily illustrated booklet prepared by Jessie M. Good. Copies may be had for 15 cents by addressing the lady at the office of the "Home Florist," Springfield, Ohio.

THE GARDEN BOOK.—Published by the Farmer Company, Market Street, Philadelphia. This can scarcely be called a booklet, though

but in paper cover, as it comprises 190 pages and is profusely illustrated. It relates mainly to vegetable culture and the insects and diseases that infest them. With some practical knowledge to start with and a handbook like this the title might well be "Gardening Made Easy."

SILICIFIED WOOD.—The subscriber lately fell in with a young man who says that he dug up, near the east bank of the Delaware, opposite Kensington, a pine tree twenty-five feet long from under a clay bank sixty feet deep. The tree was in part cut up into hones (a kind of fine whetstone). C. W. G.
Merchantville, N. J.

ARBORICULTURE AND SYLVICULTURE.—It is of great importance that, in talking with each other, both parties should have the same meaning to the words in use.

The words Arboriculture and Sylviculture are variously understood. Dr. John Gifford, in an address before the New Jersey Horticultural Society, says: "Arboriculture treats of the growing of trees for any purpose whatever. Sylviculture treats only of trees in the form of forests." This should be a good definition, but it is questionable whether Michaux, Nuttall, Sargent, and others who are eminent in the literature of trees used the word Silva in the limited sense of a forest. And, indeed, both terms are often employed without any relation to culture at all.

This confusion is apparent in many lines, and Dr. Gifford has done good service by this illustration of confusion in language.

NURSERYMEN'S NAMES.—An English author laments that the nurserymen of his country still doggedly continue to use the botanical names employed by Don, Loudon and others, though it has been clearly shown that there are other names which, under the "rules of priority," ought to have been adopted by these well known writers. But surely the English nurserymen may plead for mercy as against justice in a case like this. The nurseryman should not suffer because a good man went wrong. The names of Don and Loudon have entered into the commerce of the world, and to change his catalogue names annually, however justly it may be proved he should do under botanical rules, would drive the nurseryman's business to endless confusion. There would be as much difficulty in filling orders as he now finds under the numerous common names. Now he is under continual reproof. "You have sent me the dog flower instead of the cat plant I ordered," writes one, and another declares, "Instead of the 'Blue as Blazes,' I received the 'Devil in the Bush.'" He finds botanical names his only safety.

We can all admire the heroism of the man who can stand still and have his head knocked off "because it was so nominated in the bond." Even Shylock had to admit that his pound of flesh must go. So all of us grant that the "law of priority" ought to prevail in plant names; but in view of the inevitable confusion that must arise from its enforcement, we can only hope that some botanical Portia will turn up in time, so that the poor nurseryman may not lose his "blood" as well as his "flesh" by the changes.

THE NEW RHUBARB CULTURE. — By J. E. Morse, New York. Published by the Orange Judd Company. Few have an idea of the extent and importance of rhubarb culture in our country. By judicious methods of forcing, it can be had through most of the winter season, and, in this line, it has become one of the profitable industries. This little book of 130 pages gives the methods of forcing in full detail, as well as the out-door culture and the various economic uses to which rhubarb may be put. There is one remarkable omission. In the earlier pages we are told that new forms were first introduced by hybridizing various species, but in the chapter on Seed and Seed-raising there is not one word as to the process. For our part, we never heard of any one attempting to raise hybrids.

INFLUENCE OF FORCING ON THE COLOR OF FLOWERS.—Mr. Edwin Lonsdale, Wyndmoor, Pa., calls attention to an interesting fact relating to the color of forced lilac flowers. Chas. X. is the name of a light purple lilac used very extensively for forcing for decorations about Easter-tide; but in such a state it is pure white. To see the same variety blooming naturally out of doors, it is difficult to realize the transformation. The question arises, What causes the great change?

GENERAL NOTES

MAKING LITHOGRAPHS.—A correspondent suggests that it would interest many readers of MEEHANS' MONTHLY to know how the beautiful Prang pictures given regularly in the magazine are made.

In the first place, a water-color drawing from the plant has to be made. There are many artists who are not botanists, and botanists who are not artists. The painter employed by Messrs. Prang & Co., Mr. Alois Lunzer, is skilled in both, and the products are representations of flowers not excelled in any part of the world.

In making a reproduction, the lithographic artist to whom it is intrusted begins by tracing an outline of the painting in all its details on a transparent sheet of gelatine; this outline is transferred to a stone from which impressions may be taken. The next step for the artist is to analyze the picture in its various tints and shades, and to determine exactly the colors he will have to use for a perfect facsimile. Having done this he knows how many plates are needed for his work, as each other requires a separate plate; and now he transfers on these plates the outline of which we have spoken, in red or blue chalk, for the purpose of guiding him in drawing the colors exactly wherever the picture requires them. The colors in the various plates are mostly superimposed, and by educated skill and judgment all the hundreds of fine gradations of tints and shades which can be observed in the finished pictures are thus obtained by comparatively few color-plates. The stone which serves best for this purpose is called Lithographic Stone, and is so far quarried to perfection only at Solenhofen, in Bavaria, where (at Munich) the art of Lithography was invented by a German, Alois Senefelder, in the year 1796. The crayon used is called Lithographic Crayon, the composition of which is mainly a fatty soap colored with lampblack. The ink used is called Lithographic Ink, in composition very similar to the crayon, and rendered fluid by dissolving it in water.

After the artist has finished one plate in all its gradations, it undergoes a process of fixing by an acidulated solution of gum arabic, which causes a chemical combination of the soap in the crayon with the stone, makes it insoluble in water, and at the same time covers all the blank spaces of the plate with a skin of gum arabic impermeable to oil. The advantage of this will be readily understood when we know that the printing-ink, be it black or colored, consists mainly of boiled linseed oil as a vehicle for the color, and that this ink is spread with a roller over the perfectly flat surface of the plate to be printed. During the process of printing, this perfectly flat printing-plate is kept damp with a wet sponge or roller, the water of which is retained by the blank spaces of the plate only, while the ink, in rolling up, is repelled by the wet parts of the stone, but attracted by the parts that are drawn with the fatty crayon. In this way we can charge a plate with colored ink exactly in all the parts where it is wanted by the artist, and in the degree of strength as drawn. If the blank parts of the plate had not been covered with a skin of gum arabic, the oil of the ink would, in spite of dampness, soon find its way into the grain of the stone, and inevitably spoil the printing-plate for further use.

The first color-plate being thus prepared, goes into the proof-press, and artist's proofs are taken in the color desired. This serves the artist as a guide for his judgment in drawing the succeeding plate, which, when finished, is again proved, first on a white sheet of paper, next on the sheet already covered with the preceding color, and so on, from plate to plate until the work is complete. Of course we cannot attempt here a full description of all the technical details of the lithographic art—it would be even undesirable to do so, as the reader who does not care to become a practi-

tioner would only get confused by such details. The general principles of the process and the main lines of proceeding are given, sufficiently, we hope, to make it understood. After the proof has been finished to the artist's satisfaction, the edition is started on the Steam Lithographic Press.

The question is usually asked, how the nice-fitting register of plate after plate is brought about, so as to avoid even a blur of expression when, as in faces and eyes of children's heads, quite a number of colors are superimposed. This is in reality a very simple mechanical process, and at the same time the most perplexing to the printer.

There are various ways by which this register may be secured, but the simplest, and the one we employ, consists in trimming the edges of the sheet to be printed perfectly square, and in feeding it to the printing press with the lower and the right-hand edge against a permanent gauge, thus enabling the printer to get it every time exactly on the same spot on the press, no matter how often he may have to repeat that operation. The printing-plate for each color has to be adjusted in the press so as to meet the sheet exactly where desired; and if this plate is thoroughly fixed, and the press in good order so as to prevent all unsteady motion, and the feeder sure of hand, the work will proceed to satisfaction. But there is one element of trouble which we cannot control, and which is the source of maddening trials to the printer, alas, too often. Paper is very hygrometric, *i. e.*, susceptible of being influenced by the humidity in the atmosphere. Even the best paper will stretch in passing from a dry to a moist air, and *vice versa*, and with the rapidly changing conditions in our atmosphere, the sheets become too often so lively during the process of printing, that not only the temper of the printers is sorely tried, but a whole edition may have to be given up as a sacrifice to the elements.

Much might be said about the perfect grinding and mixing of the printing-inks, the exact matching of tone and strength of color, the keeping of the required tone throughout an entire edition, where a slight variation in this respect in the course of many different impressions would spoil the whole, but these are matters not relating to the elucidation of the process.

We will only say in closing, that the deeper, stronger and richer the original to be reproduced is painted, the more color-plates will be required to obtain a perfect facsimile. The colored plate in the March number of the MONTHLY required thirteen color-plates.

HUCKLEBERRIES.—The huckleberry crop is a godsend to the families of coal miners in the vicinity of Hazleton, Pa., returning to them between $40,000 and $50,000 every year during the months that the season lasts. In what is known as the Diamond addition of Hazleton, one of the handsomest blocks of buildings is the property of a miner's widow, who was left penniless with three small children, all girls, ten years ago. The block was built and paid for entirely by the proceeds from the sale of huckleberries picked by the widow and her three children.

The huckleberry pickers of that region are chiefly the wives and children of the Hungarian miners and Italian laborers. An Italian woman can pick easily forty quarts a day, which, averaging the season through, is equivalent to $2.00 earned.

Between the hours of 10 and 11 o'clock in the forenoon the berry pickers begin to come in from the hills, every vessel overflowing with the wild fruit. Dealers, to expedite the business, meet the pickers with wagons at convenient points, where the berries are purchased and paid for in cash on the spot. The average price is five cents a quart.

Huckleberry picking in that region has an accompaniment not familiar to other districts, it is said. Little dogs that form part of the huckleberrying outfits go to the mountains with the pickers by the score. These dogs have an important duty to perform and they do not hesitate in the performance of it. Indeed, they seem to thoroughly enjoy it. Their duty is to hunt out and kill the rattlesnakes and copperhead snakes that are numerous on the huckleberry barrens, and warn the pickers of the proximity of the venomous reptiles.

The earnings of the Hungarian and Italian families at picking huckleberries in this part of the coal region will range from $100 to $200 each, according to the number and skill of the pickers. Nearly a million quarts, it is believed, were picked and disposed of in the Hazleton market alone this year.—*Calif. Fruit Grower.*

VITIS INCISA.

WAX-LEAVED GRAPE.

NATURAL ORDER, VITACEÆ.

VITIS INCISA, Nuttall.—Leaves trifoliate, thick and somewhat fleshy; leaflets incisely toothed or lobed, cuneate at the base; flowers tetrandrous and tetrapetalous; berry globose-obovate, one-celled, one seeded. Torrey and Gray's *Flora of North America*. See also Chapman's *Flora of the Southern United States*; Young's *Flora of Texas*.

One of the pleasures the lover of wild flowers enjoys is the recollections connected with the first meeting with some rare plant in its native home. The beautiful and interesting plant now presented is a good illustration of this. It was the privilege of the author of this chapter to make botanical collections in the Indian Territory over a quarter of a century ago, and his first meeting with this plant was on the banks of the Arkanas River, near Fort Gibson, where it was climbing over low bushes. Its thick, shiny, waxen leaves gave the whole mass a very unique effect. It was a pleasant trip, bringing the collector into contact for the first time with the comparatively civilized Indian tribes of Creeks, Cherokees, and Choctaws. The roots were found to be tuberous, and a small one of the size of that represented in the plate was brought home for the writer's garden, where it has remained to this day, continually bringing to mind pleasant incidents in the collecting trip. It is from that plant that the drawing was made. It was first seen, by the celebrated Thomas Nuttall, in the early part of the century, and, probably, in the same vicinity where the plant now illustrated was collected. What became of his specimen is not known. But he intended to describe it under the name here given, and the name with the specimen was adopted by Torrey and Gray in the work quoted at the head of the chapter, with due credit to "Nuttall's manuscript." To Nuttall, as well as to the writer, the trip to this region must have been a very enjoyable one. The cost of the journey was borne by Collins, Haines and a few other members of the newly-founded Academy of Natural Sciences of Philadelphia, and amounted to but a few hundred dollars,—not more than enough to carry one on a trip of a few weeks to the same region and back from New York or Philadelphia in these days,—yet, after a year of exploration, he writes back to his patrons that his money is not nearly exhausted, and asks leave to stay with it over another year. As a matter of fact, little is yet known of it outside of the territory in which Nuttall first discovered it. It was subsequently found in Texas, by Lindheimer, Leavenworth, Wright, and Hall,—and is noticed by Engelmann in Dr. Wizlizenus' report,—and Schott collected it at Santa Magdalena, Sonora, as noted in the Report of the Mexican Boundary Commission. Though the author of this chapter has had occasion to examine the collections of travellers, he has met with no specimen from either within or without these boundaries. It would seem to be somewhat of a rare plant, even within its own native locality.

Botanists differ in opinion as to whether *Vitis*, *Cissus*, and *Ampelopsis*, should be regarded as distinct genera, or only subsections, employing *Vitis* to cover the whole. In *Vitis*, the petals are somewhat united, and are discharged from service in the form of a little cap, covering, for a while, the growing berry. In *Cissus*, the petals are distinct, as shown in our picture, that should be a *Cissus*. With the difference of opinion, however, that has been already referred to, the plant has been represented under the name by which it was originally introduced, though the general appearance would suggest some distinction from the usual forms of the members of the grape vine or *Vitis* family.

Those who love to study the behavior of plants, and how nature proceeds in the process of a plant's manufacture, from the sprout-

COLOR PLATE

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Those who love to study the behavior of plants, and how nature proceeds in the process of a plant's manufacture, from the sprout-

COLOR PLATE
INTENTIONAL SECOND EXPOSURE

ing of the seed up to the final production of seed again, will find much enjoyment in a study of this plant. For instance, there is much controversy, among students of plant life, as to the nature of a tendril. The general tendency seems to be to conclude that it is a modified branch. But the difficulty here is that a branch is supposed to originate from an axillary bud. But in our plant, and, indeed, all plants of the grape-vine family, the tendril is not in the axil of a leaf, but opposite to the leaf. It could, therefore, scarcely be a modified branch in the sense that we take a branch to be. On closer thought, we see that the tendril was really the whole axis or leading shoot, and that when it was decided to become a tendril, the axillary bud, which in most species of plants would have been but a branch or branchlet, assumed the duty of leadership! In many species of plants, there are two axillary buds, one above the other, the one being called the normal, the other the supra-axillary. In our plant, there are these two, and we have both buds growing—the one as the active leader in the place of the one tendrilized, the other as a small branchlet near the base of the leaf.

Usually in species with supra-axillary buds, only one develops. One remains dormant for all time. In some species the upper bud starts to form the branch, in others the lower; but, whichever is the active one, it is uniform through the whole species. In the grape-vine family it would seem to be the upper of the two buds.

Another very interesting consideration is that, in some species of the grape-vine family, the process of reducing the leading shoot to a tendril only occurs at every other node or every third node. In our plant, the rule would seem to be from every other one. Why there should be these lapses, is not quite clear. As we see in our picture, there is no axillary bud in the tendrilless node. What was the axillary bud has become the leader, as in the case of the lower node. But what has become of the leader that, in the other case, has become the tendril? It is simply a case of atrophy. We can see, by the other cases, how very much weaker the tendril has become through being divested of leadership,—in this case, it is simply weaker still,—in fact, has been wholly absorbed. The explanation of this interesting phenomenon has to be sought for in the study of growth energy. As this is rhythmic, the degree of force varies in the progress of every wave.

Another very interesting point is connected with the motion of the tendrils. They usually coil in one direction until they find something to cling to, when the motion is turned in the opposite direction. In many cases, the tendril twists without having caught a helping hand. This may often be seen in vigorous growing grape vines. So far as the author knows, there has been no attempt to explain what seems to be a vagary in this case.

Another very interesting study in our plant is the remarkable warty character of the stem, which is shared by the thready fibres that connect the tubers together. These are commonly known as lenticels, the office of which is said to be the admission of air to the interior. To the author, they seem suber-cells—that is, agencies for the production of cork, the office of which is to aid in the rifting or loosening of the bark when it interferes with the expansion of the trunk. Why they should be so numerous and prominent in the comparatively short-lived stems of our plant, can only be answered in general terms by saying that, through all vegetation, cases of nature overdoing her work are abundant everywhere. Some would say that the plant itself has changed through the long ages, and that these are the remains of organs once of great service to the plant.

When we read of vines in a general way the impression prevails that we have before us plants of a permanent woody character growing over arbors, and bearing from the same stems crops of luscious fruit year after year continuously. We can scarcely think of them as herbaceous plants. But this is the character of the species here described. It dies down annually, preserved for another season's activity by its tuberous roots. But this herbaceous character is not confined to this American species.

EXPLANATION OF THE PLATE.—1. Growing branch. 2. Flowering branch. 3. Axillary bud has become the leader, pushing aside the former leader, which has become a tendril. The tendril may be seen changing its line of motion where it has reached its support. 4. Twig of *Viburnum* supporting the vine. 5. Node in which the tendril is atrophied. 6 Portion of main stem, showing warty cork cells. 7. Flowers magnified. 8. Full grown, but unripe berries. 9. Root tubers.

WILD FLOWERS AND NATURE.

THE PROTECTING FOREST.

Enforst to seeke some covert nigh at hand,
A shadie grove not farr away they spide,
That promist ayde the tempest to withstand;
Whose loftie trees yclad with sommer's pride
Did spred so broad that heaven's light did hide,
Not perceable with power of any starre;
And all within were pathes and alleies wide,
With footing worne, and leading inward farre:
Fair harbour that them seems; so in they entred arre. SPENSER.

SQUIRRELS.—This place has not, of late, been much of a resort for squirrels—but within the past few years some have been imported and let loose. This spring they have, according to the testimony of the boys, been playing havoc with the maple trees, especially *Acer saccharinum*. They have barked quantities of limbs of this maple, generally selecting those of the size of a broomstick and up to a diameter of three to four inches. Most of the damage is done among the upper branches. I have been unable to examine any of these branches closely in order to determine how deeply they have gone into the bark. Our spring is very backward and leafage not advanced very much, so that whether the leafage that has opened out on the branches beyond where they are barked will wither back or not can't be determined for a while. Yet, I have not seen the squirrels do this, but it is most likely the case.

I never heard of these animals doing a damage of this nature. We shall have to pass a law that all squirrels running at large shall be muzzled. W. C. EGAN.

Highland Park, Illinois.

[The writer has a few squirrels that give him pleasure in watching their frisky gambollings from bough to bough and tree to tree on the maple trees around his residence. When their own stores of nuts have given out, he has seen them eat maple buds, but never knew them to bark a limb. This must be unusual. It would be better to throw around a few nuts in the fall for them to gather for their nutteries in hollow stumps or branches than to muzzle the poor hungry little creatures.

Few animals give more interest to a country home than squirrels—and then they are models of provident industry. There could have been but few of these around where the wise man wrote, or he would have sent the sluggard to the squirrel as well as to the ant. "Consider his ways and be wise." Some learned institutions carve owls over the doors of their buildings, as emblems of wisdom. Well might saving funds, or other provident bodies, place a model of a squirrel in public view, as the representative of the happy faculty of looking ahead. Of all creatures the squirrel takes care to prepare an umbrella in advance of the rain.

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COLUMBINE—AQUILEGIA CANADENSIS.—*Aquilegia Canadensis* is a shade-lover and, as some persons put it, is fond of a foster-mother, and does not thrive in the bright, hot sun as it does if growing on the north side of a house or board fence. It grows on the creek shores of Maryland, in Ann Arundel County, and seems then to fancy the banks of oyster shells, which were piled up by the Indians very many years ago, on the edges of the creeks, which are skirted with small trees, such as cedar, seedling cherry trees of the heart varieties, dropped there by the birds, service-berry, sumacs and others. As they are choked up by other plants, they grow spindling, from six inches to two feet,—but few blossoms, two or three to a plant. Yet, when removed to common garden soil and given a chance, they become magnificent specimens three feet tall, a foot or more broad and covered with beautiful blossoms in extravagant profusion. In this State, this plant is found on the edge of the Mississippi River, amongst limestone rocks, growing in their crevices, and are of all sizes, blooming from two inches tall to two feet, their height depending entirely on the situation that they occupy. Those growing in

the soil between the rocks are thrifty, but are puny plants in comparison with those removed to the garden and given elbow room. Further inland, they are found in woods, amongst limestone rocks and dense shade. I have never met with them outside of woods or copses. F. K. STEELE.

Festus, Mo.

[To the above excellent practical suggestions for the wild Columbine, may be added that it applies to the whole Columbine family. They all prefer partial shade.]

SARRACENIA FLAVA IN ITS NATIVE HOME.—The annexed cut, from a photo kindly furnished by Mr. C. E. Pleas, Chiply, Florida,

SARRACENIA FLAVA.

shows the appearance of this curious pitcher plant, in its native home in Florida. The family is believed to have been evolved from some other form of plant after insects appeared on the terrestrial scene and, with a liking for animal food, proceeded to adapt itself to trap and eat them. Certainly, if we take one species by itself, the arrangements appear to be clearly the result of adaptation. But this leaves the various forms of pitcher plants still to be accounted for. How much better adapted, for instance, is this long, weak-stemmed species to insect-catching or insect-eating than the short, sturdy huntsman's cup of the Northern States?

HABITS OF THE ROBIN.—Mr. W. C. Egan says, on page 67, that his female robin pecks on the window three times when the shades are green. One of the habits of all robins on the ground, when hunting for worms in the early spring, on a green lawn, is to peck on the ground several times, when, lo and behold! an earthworm puts its head out of the ground, as if to see who is knocking at the door, when Mr. or Mrs. Robin gobbles it up. This I have known for a long time. After pecking on the ground, the robin waits a while, and if the worm is not at home, it moves onward to another worm-cast and repeats the operation. Another correspondent remarks upon the "supposed return of birds to their old locations." With the Black Martin, there is no supposios about it. This is settled for all time, in the writer's practical experience. A Black Martin male with a white feather in its wing comes back every spring to the box I have in my yard. The sexes are not exactly equal. Many of the male Martins have several wives, and it is often the case with the English Sparrow. Where there is a preponderance of females, polygamy is practiced. This is the case with the Bob White or Partridge and Quails. There are no "old bachelor" birds. They are always in demand. F. K. S.

PETALS CHANGING TO STAMENS.—A specimen of Tartarian Honeysuckle, sent by Miss Bessie Putnam, of Harmonsburg, Pa., has the lobes of the corolla in some of the flowers transformed into anthers. It was by noting transformations like these in plants generally that gave rise to the science of morphology. The fact has now been demonstrated that in an early stage of the individual the various organs of a plant have not been definitely determined. The conception is that leaves, flowers, and fruits are essentially leaf-blades.

GENERAL GARDENING.

THE SWEET PEA.

Here are Sweet Peas, on tiptoe for a flight,
With wings of gentle blush o'er delicate white;
And taper fingers catching at all things
To bind them all about with tiny rings.

Gardeners' Chronicle.

VALUE OF FUNGICIDES.—The value of fungicides in preserving the foliage and fruit of trees is now so well understood, that, in very many gardens, their use is looked on as an essential part of the work connected with them. Not only are they of value in the fruit garden, ensuring a crop of fruit by the preservation of the foliage, but, in the case of ornamental trees, the leaves of which are liable to be disfigured or destroyed by blights, spraying is highly beneficial. Roses, planes, lilacs and horse-chestnuts come to mind as subjects generally preyed on by fungi of various kinds. One or two sprayings of a season would suffice.

What should be remembered in connection with this is, that a good spraying or two this season will lessen the necessity of doing it the next.

The foliage which falls to the ground from trees not sprayed is full of live spores, which start afresh on their work of destruction as soon as new leaves bud forth in spring. But sprayed foliage does not contain breeding beds, and thus a tree sprayed a year or two in succession, will hardly need attention for some years following,—indeed, cases are known where trees which were annually defoliated by blights and were afterwards well sprayed for two or three years became so free from attack, that no spraying whatever was needed for several years thereafter. J. M.

Germantown, Phila.

LARGE ENGLISH GARDENS.—In the Old World, a gardener is often a person of great responsibility, and requires a breadth of intelligence more varied than in, probably, many professions. Welbeck Abbey, for instance, the seat of the Duke of Portland, has a garden that is ten miles in circumference. The vegetable garden alone occupies 32 acres. There is a sunken garden, ten feet below the normal level of the ground, that occupies two acres, and requires an immense number of bedding plants to fill them. The glass houses on the place for the growth of flowers, fruits, and vegetables strike a casual observer as constituting a village rather than as adjuncts to a private gentleman's mansion. The whole 32 acres is enclosed by walls on which fruit trees are trained. One structure for stove and greenhouse plants is 300 feet long, and of considerable breadth. A house in which figs, peaches and strawberries are forced for winter and early spring forcing is 270 feet long. There are a large number of houses especially devoted to the grape vine—one wholly to the plant under pot culture. A glass front to a wall on which peaches and nectarines are trained is a quarter of a mile long. Another wall-house devoted to apricots and plums is also a quarter of a mile. There are houses for forcing tomatoes, others for cucumbers, and others especially for carnations, roses, and similar florists' flowers for cutting. In the out-door fruit garden is an arch-trellis on which fruit trees are trained 720 feet in length. For all the varied attainments required to oversee such an immense establishment, it is said that the incumbents usually manage things like clock-work. The London *Gardeners' Chronicle*, from which these facts are gathered, gives great praise to the present gardener, Mr. J. Roberts.

PAINTING TREE WOUNDS.—Months ago, I suggested that, where large limbs were removed from trees in March, the knots were very liable to rot and thereby weaken the trees. My observations which led me to this conclusion were mostly on apple trees. Recently returning home, after an absence of a few months, I find a copy of MEEHANS' MONTHLY in which it is contended that the knots of large limbs removed in March will not rot if the wounds

are well painted. This is contrary to my idea, which is that the decay is caused by internal moisture. I concluded that the sap or moisture came into the knots for the use of the limbs, and these, having been removed, the moisture remained in the knots and caused the decay. Will not peeled green logs, well painted, decay quicker than when not painted? How rapidly birches and various other trees rot if felled in early spring! In my woods, a White Birch was felled, leaving a stump some four feet high, and the amount of sap which for weeks dropped from that stump was very great. I do not think any ordinary painting would have stopped the flow or prevented the stump from rapid decay. My idea is to remove large limbs only in cases of necessity, and when the trees are somewhat dry, and give the knots some opportunity to dry and sere before the great flow of sap in spring. After getting rid of all the internal moisture you can in the knots, carefully paint the wounds to keep out the external moisture. Is not this correct?

Exeter, N. H. J. D. LYMAN.

[Mr. Lyman is right in some respects—indeed there seems little difference between the views in both articles.

The moisture stored up in winter for the tree's use when leafing-time comes is drawn out by these growing leaves. It is these leaves that make the trunk dry. The little that escapes through a wound is very small in comparison with that which has to be drained out by the foliage. The tree would dry though the wound should be solidly sealed. The object of painting is to keep out water. It does not interfere with the natural drying out of the tree. Painting in early spring, when the wound may be a little damp, may not be as effective as if the surface of the wound were as dry as it is in summer,—but it is effective to a great extent,—and if the painting were gone over again in summer, as Mr. Lyman suggests, the two coats would certainly be all the better for the tree. The great idea to be kept in mind is to prevent water from entering the wound and aid in rotting it. Even the best painting will seldom perfectly insure this--and, as a correspondent of MEEHANS' MONTHLY has well suggested, a coating of shellac is still better than paint in accomplishing it]

THE HEATHER.--Recently appeared a sketch of the Mediterranean Heath, *Erica vagans*, which had been found to resist the unusually severe winter without the loss of a single leaf. Its companion in adaptation to American climate, the famous heather of the mother country, *Calluna vulgaris*, is now given a place in our illustrations. It seems so much at home in our country as to have taken possession of

CALLUNA VULGARIS.

some of the cranberry plantations in the Eastern States. As will be noted by comparison with the cut of the Mediterranean Heath, the branches of the British species have a tortuous tendency, and the leaves are so short that the differences may be readily seen. A colored plate and history appears in our issue of May, 1899 (Vol. IX., No. 5).

PROPAGATING THE DATE PALM.—No word having been received from Prof. MacClatchie as to how the "suckers or cuttings" of the Date Palm are produced, and as the matter has become one of general interest, we sent to the Old World to see what could be learned in the matter. It was clear that if large or otherwise improved varieties can be perpetuated as we would perpetuate a good variety of apple or pear, there must be some way of doing this, though no one ever saw a Date Palm under cultivation with any tendency to sucker. Our friend was fortunate in the acquaintance of Dr. Bonavia, who has made the Date Palm in India a special study, and we have been kindly permitted to make use of the private letter in which Dr. B. discusses the question. He says there are innumerable kinds of named varieties. A comparatively small proportion give first-class fruit; the others are grown for special purposes—cattle-feeding, for instance. All date trees do not produce offsets; but some do, and they are then propagated by these. The offsets come out from the base of the stem, and must be three or four years old before they are chopped off. If taken younger, the offsets will rot. He has seen ninety per cent. root after being chopped from the parent tree. If the States or United States are to experiment with date growing, it would be far better to import an experienced date grower, as well as the date trees. The French in Algeria root the offsets more successfully than the natives. They plant them in pots 15 or 18 inches in diameter, plunge these pots in well-manured soil, in nursery rows, and well tend them by intelligent care. The natives usually set them in the open ground and lose a large proportion. He adds, "There is no royal road for making Date Palms produce offsets; they do it spontaneously and seemingly only when they have a mind to."

THE FORESTS OF DENMARK.—In relation to the article in the June number on the Forests of Denmark, Mr. P. J. Pedersen says: "You make me say that the natural forests of Denmark consist almost entirely of beech, juniper and yew, while I meant to say that they consist almost entirely of beech, and only mentioned the two latter plants to state the fact that they now are the only conifers to be found in a wild state. I believe I put it thus: '. . . consisting almost entirely of beech—juniper and yew (T. b.) now being the only conifers, etc.'

The juniper is, certainly, quite prevalent in some localities, but is little more than a shrub, although it will, in some instances, reach a height of about 25 feet. Of the yew, only a few hundred specimens are to be found in forests of southeastern Jutland, and it would be wrong to give either of the two plants almost equal rank with the beech."

FORMS OF TREES IN LANDSCAPE GARDENING.—Occasion has been taken, several times, to show the value of peculiar trees in the general effect of landscape gardening designs, the Lombardy Poplar being a prominent case. These trees have little beauty in themselves, but come in well as a part of a component whole. In this annexed illustration, we see again how well the Lombardy Poplar helps the general effect. Few matters are more important in garden art than the gateway and carriage road. In the illustration the entrance would be comparatively tame without the addition of the poplar trees. As it is, the effect is imposing. It is the entrance to the Nugent Home in Germantown.

DRIVEWAY ENTRANCE, NUGENT HOME, GERMANTOWN.

ARTEMISIAS.—In nearly every old-fashioned garden in the North of Europe, a plant of wormwood is regarded as essential. The leaves dried, reduced to powder, mixed with bread into a pill, is an infallible remedy as a vermifuge. It is also called "old man"—but why is not on record. Singularly, on the Pacific, *Artemisia Californica* is also called

"old man." The Indians believe they can foretell the weather. If before the rainy season comes, the roots are not more than six inches long, there will be plenty of rain—if over a foot, there will be a dry season. It is supposed that the plant knows beforehand that there will be little rain, and so sends its roots deep, in order to prepare for the drought at the surface.

AMARANTHS.—Among the best ornamentals grown are the flowers belonging to the natural order of Amarantaceæ. Sometimes the individual flowers are not showy; but they are so brilliantly colored that, in the aggregate, they are very attractive. The Prince's Feather is an illustration. Another kind, known as the Bachelor's Button or Globe Amaranth, has its small flowers collected in round heads, and gives varieties of white, orange, and purple colors. In many cases the leaves are colored, and make as much show as would the gaudiest of flowers. But the greatest recommendation of the flowers of this family is that they seem to thrive all the better for hot and dry weather. Certainly they are among the best of plants, to submit to these extreme conditions.

THE HARDY FLOWER GARDEN.

THE HOLLYHOCK.—The Hollyhock has no thorns, and it lingers late into the autumn, in New England, when almost all other flowers have yielded to the north wind and gone with the fall of the leaf. Hence they have a charm for children and are their favorites above, perchance, even the much-admired and beloved rose. The buds, enveloped in their woolly coats, are long protected from all the early frosts, and often expand somewhat at the tip-top of the tall, tree-like hollyhock stems, and so conspicuous are these buds, they are often much admired by children of a larger growth as well, manifesting, as they do, a care and provision beyond our own.

The mucilaginous petals of the hollyhock are also often much liked by children, and they are harmless. Yet it ought to be taught, to those who partake of them, that there is a difference, as all bright petals are not equally harmless—the monkshood, especially, being so poisonous they should be guarded.

San Diego, California. E. E. ORCUTT.

IRIS MISSOURIENSIS.—I am interested in Irises and, desiring to make a collection, have been taking notice of everything I see regarding them. So far I have not noticed anything about our pretty native Iris, *I. Missouriensis*, nor is it mentioned in the revised edition of "Gray's Field and Forest Botany." Am I, therefore, to conclude that it is not common in cultivation? It grows about eighteen inches or less in height—leaves are narrow, stems stiff, bearing usually two flowers; color of outer segments white veined with purple, inner segments, and petaloid stigmas purple. There is some variation in color, and I have found a few flowers white with yellow markings, but these are very rare. In the garden, it forms a compact clump—does not crowd itself out, as some plants do. It is in every way a desirable plant for the perennial flower border.

Cheney, Washington. SUSAN TUCKER.

[This beautiful and distinct Iris was figured in the first volume of the first series of "The Native Flowers and Ferns of the United States," from a Colorado specimen. It takes to garden culture in the East very well.]

THE CULTIVATION OF WATER LILIES; A NEGLECTED FEATURE OF GARDENING.—The presence of small streams or brooks in the grounds of suburban residences is not uncommon, yet attempts to make good use of them by cultivating a few aquatic plants—particularly those deliciously-fragrant water lilies so insistently sought in their native haunts—are extremely few. These hardy flowers are easily grown and of less care than most garden flowers; while the pleasing results are in greater proportion. *Nymphæa odorata* is the fragrant white-flowered one above referred to. *N. lutea* is a desirable yellow species of similar type. Both are easily obtained and grown.

CULTIVATION OF THE FRINGED GENTIAN.—*Gentiana crinita* is frequently sought for among hardy perennials; but the fact of its annual nature is overlooked. It is perhaps the handsomest of the genus and it is to be regretted that it cannot be brought into cultivation. But, comparing it with other annuals, it is more desirable than many of the most popular of that class, and it would be a paying operation to someone who would undertake to raise it for sale year by year.

FRUITS AND VEGETABLES.

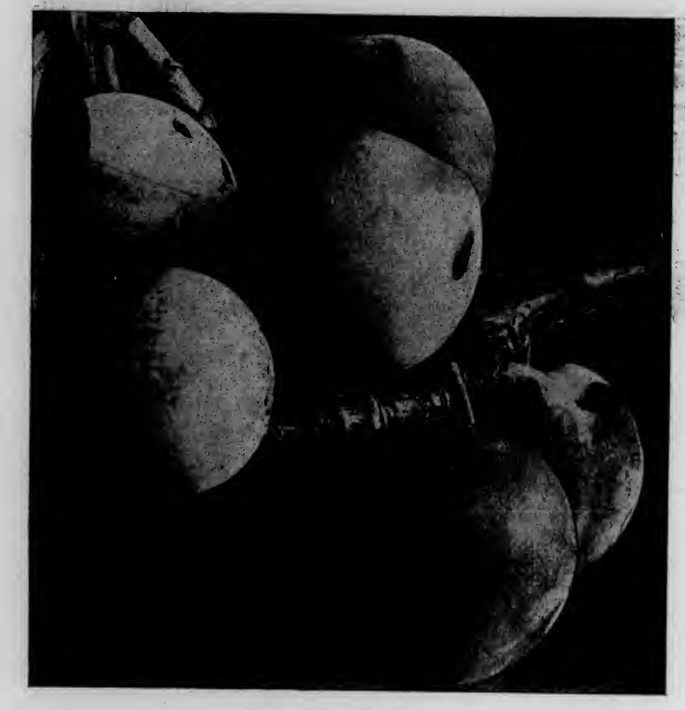
STRAWBERRY CULTURE IN MINNESOTA.—The annual report of the Superintendent Central Trial Station of the Minn. State Experiment Station includes the following valuable information concerning strawberry culture in that State, much of which will apply elsewhere:

"Our strawberries produced a fairly good crop last year, and are in a fair condition for another season. In cultivating strawberries, we follow the plan of setting the fruit two feet apart in rows four feet apart, and allow all runners to grow; but in the case of strong growing varieties, like the Bederwood and Crescent, we remove a part of the runners, so that they will not be too thick on the land. We keep the bed well cultivated during the growing season. On the approach of cold weather, generally the latter part of October, or early in November, we put on a covering of straw. We prefer to do this before severe freezing weather, as we like to have the leaves bright and green when they are uncovered in the spring, and very severe freezing without protection will sometimes kill the foliage in autumn. We uncover rather late in the spring, removing most of the straw from over the plants, but leaving as much as possible between them. We do not cultivate in the spring of the year. In covering strawberries we have found rather heavy covering desirable, especially in winters when there is no snow on the ground, since after some winters when we have not had snow the plants have been so weakened by severe freezing that, while they would start into growth, yet they did not have sufficient strength to mature their fruit properly, and as a result a large number of nubbins were formed. We have always found that such plants are not easily moved; at least not until late in the spring, after they have made a good growth of new roots. If very heavy covering (8 inches solid straw) is to be resorted to, the best plan is to put the rows six feet apart, which allows plenty of room for storing mulch between the rows in the spring. In this place, between the rows, it can be kept until all the danger from frost in the spring has passed, and it is then in convenient place for covering the plants on very frosty nights when they are in flower. There can be no question about the practicability of this latter way of protecting the flowers of strawberry plants from being destroyed by frost, and it should be more generally practiced, since without it the work of growing the plants for nearly two years may be entirely lost. It is our custom to fruit the beds at least two years in succession, and the beds are renewed by mowing off the plants and weeds close to the ground as s on as may be after the crop is gathered. This growth of weeds and plants is then burned on the bed if it is very dry. If the weather is moist so that it is impracticable to get a quick burn on the bed, then the material is either raked into the rows between the beds before burning, or else it is carried off of the bed and burned. I think that much the best way is to burn it on the bed; but this is not safe except when the material is very dry so that it will burn quickly. If it is at all moist, and lies over the plants and slowly burns, it is apt to kill them out.

As soon as the burning is over, we put on a riding corn cultivator and go over the rows several times, leaving a strip of plants about 16 inches wide for each row. The space between the rows is kept well cultivated until the plants which have been left have started, when the rows are gone over and the beds thinned by taking out the old and weak plants so that they will stand about six inches apart each way. With this treatment of the bed we have generally got as good results from the second crop as from the first.

We have grown 56 varieties of strawberries this year. Bederwood seems to be the best all-round perfect flowering variety, either for home use or for general marketing. Its special value for recommending to beginners lies in the fact of its being so very vigorous and productive, and that it is bi-sexual, not requiring any other plant near it for fertilization. The fruit is rather soft, but does very well for home use and the near market. The Haverland is a fine, light-colored berry that is very productive. The Warfield has not been as productive with us for the last few years as previously, but holds on well with many growers in this vicinity. I am inclined to think that our plants have degenerated and that we should renew our stock of plants of it. William Belt produces large fruit, but is not sufficiently productive. Marshall is of about the same value

as William Belt. Nick Ohmer is a light red, short-bodied berry of good quality that has been fairly productive. Hunn is a variety sent out by the New York Experiment Station at Geneva. It is a late pistillate sort, and it is recommended that Gandy be used to produce pollen for it. We received 50 plants two years ago. They made a good growth the first year, but the second were so badly rusted that the crop was ruined. Bissel had done fairly well. Mary is a very desirable pistillate sort of light red color, and very productive. Ridgeway is a good late, light red berry of firm flesh. Glen Mary is a light red, conical berry, that is fairly productive. Lovett has been very productive in years past, but this year did not do so well as usual. Crescent seems to be as reliable as ever, and while the fruit is small and of rather inferior quality, yet it is so very vigorous and productive that I am inclined to think that it is one of the most profitable sorts for planting in severe locations."



ABUNDANCE PLUM.

MOTH TRAPS.—Many of the insect pests of the orchard proceed from the work of the night-flying insects. The Codling Moth, the progenitor of the "worm" that is so destructive of the apple crop, is one of the worst of these. Mr. S. A. Hazeltine, of Springfield, Mo., has invented a trap by which the moths can be caught in large numbers, before they have had much time to deposit their eggs in the young fruit. There seems no reason why such an invention should not be of value to the successful orchardist.

THE JAPAN PLUMS.—What are known as Japan Plums are improvements from a species of *Prunus* native to Japan. It seems intermediate between the common wild plum of our country, *Prunus Americana*, and the common garden plum, *Prunus domestica*. It is a better plum than our wild species gives us, though not equal to our garden plum. It is, however, free from many of the troubles that make plum raising here so difficult, and on that account has attained to great popularity. The cut annexed represents the variety known as "Abundance," which, after a four years' test in comparison, Prof. John Craig of Cornell University, regards as desirable. He says, "When the Abundance is well thinned, it is certainly an excellent plum, and one which most persons delight to eat." By his kindness we have been permitted to reproduce the illustration here.

PYRUS JAPONICA JELLY.—Peel the Japan Pears as thin as possible, throwing the fruit into a basin of cold water to keep it from discoloring. Allow for each pound of fruit three pints of cold water, put the fruits into a preserving-pan, bring them quickly to the boil, and let them boil for one hour until quite soft. Strain the water from the fruit, pressing out the juice only. Weigh the water, and allow a pound of the best cane-sugar to each pound of water. Put the sugar and water into a clean preserving-pan, and boil quickly, stirring constantly after the sugar is melted. When a little dropped on a plate jellies pour at once into hot jelly-moulds or gallipots. Cover while hot with white pasted paper, and store in the usual way. A nice jam can be made as well of the Pears—for this they must be cored—allowing a pint of water to each pound of fruit, the water and fruit being weighed together. Allow as for the jelly a pound of each—the fruit and sugar. Put on together in the preserving-pan, and boil till a little jellies quickly on a plate.—*Gardening Illustrated.*

SERVING BLUEBERRIES.—Blueberries would be good eating at any season of the year, but coming as they do between the last picking of strawberries and the first peaches and other larger fruits, they are doubly welcome. Then, too, they are such a firm, meaty little berry that there is almost no limit to the wholesome dishes that may be concocted with them. To serve blueberries in perfection uncooked, make a plain or lemon-flavored syrup with granulated sugar; when cold, pour over the berries, let stand half an hour, and serve very cold.

Country Gentleman.

BEES INJURED BY SPRAYING FRUIT BLOSSOMS.—On page 69, Mrs. Bowerman says that "the bees have such a struggle for existence on account of the spraying of fruit trees in blossoming time." This must certainly be a slip of the pen or a typographical error. Nobody sprays trees in blossom. Paris Green kills the blossoms, and all writers write against any such doings as that. After the blossoming time, when the fruit is as large as peas, the spraying takes place. But there are exceptions to every rule. Thinking over this spraying business, my feet brought me to a gooseberry bush, all in full bloom. Looking over the bush, I noticed that the Currant worm was busy devouring its leaves. There are several ways of treating these worms—one is to jar the limbs with a stick, when the worms fall to the ground and they may be trampled to death. Another way, with less exertion, is to use Hellebore, slug shot and Paris Green. Either of the latter will slay them. The gooseberry blossoms furnish much honey to the bees. Each blossom hangs with its opening downwards. It is hardly possible to force Paris Green into the tube of the blossoms, unless one strives to do so. But we who spray do not try to do anything of the kind, and I feel confident that not an infinitesimal drop ever penetrates to the bottom of the tube where the honey is secreted. In another place, Mrs. Bowerman says, "Among those that grow to large trees are the Cornus, Sumach," etc. These trees are very small in this country—ten or twelve feet mostly.

Festus, Mo. F. K. STEELE.

STONE-SPLITTING IN PEACHES.—Most people are familiar with the fact that, in opening peaches, the two halves of the stone will sometimes be found separated. Examined by a good pocket lens, the mycelium of a fungus will be found connected with this condition. There seem to have been no carefully-conducted observations on this stone-splitting state, but from analogy one might infer that the fungus had to do mainly with the result. If there had been any exposure to the air, this inference would not be warranted, as a spore might float on the diseased portion, but in this sealed-up state, it can only be supposed that a spore made its entrance into the fruit in its early condition, and grew with the fruit's growth.

THE PHYLLOXERA IN CALIFORNIA.—Mr. Geo. Husmann, whose scientific and practical knowledge of grape-growing and wine-making is so widely known, is in accord with the conductors of MEEHANS' MONTHLY, in the belief that State laws and ordinances are utterly ineffective in preventing the incursion of insect pests. In spite of the most rigid watchfulness, Europe could not prevent the introduction of the Grape Phylloxera, nor has Canada been able to exclude the San Jose Scale. Mr. Husmann now states that, for all the State laws, the Phylloxera has obtained a foothold in California, and, instead of shouting for more law, the grape-growers had better follow the lead of France, and graft on resistant vines.

BIOGRAPHY AND LITERATURE.

PRIMEVAL MAN.

With brutes alone he armed himself for war;
Free to the winds his long locks dancing flew,
And at his prowling enemy afar
He shot his death-shaft from the nervy yew;
In morning's mist his shrill-voiced bugle blew,
And with the rising sun on tall rocks strode,
And bounding through the gemmed and sparkling dew,
The rose of health, that in his full cheek glowed,
Told of the pure, fresh stream that there enkindling flowed. PERCIVAL.

A PRACTICAL TEXT BOOK OF PLANT PHYSIOLOGY.—By Daniel Trembly McDougal, Ph. D., New York: published by Longman, Green & Co. In every-day language, the term "practical" is employed to indicate that which rests on the observation of the common people, aside from any learned or scientific deduction. But this work is addressed to those already well advanced in what is known as the "higher education." Only those who are well versed in Greek and Latin will comprehend the position of the author—so numerous are the technical terms employed. Most botanical authors give a glossary, explaining these terms, but this is not given here. Indeed, the author seems to take it for granted that his readers are versed in German and French also—the references to works in these languages are numerous.

Dr. McDougal appears in this work to have been a devoted student of German biologists, who are certainly doing good work in microscopic botany. A similar study of American progress in the knowledge of plant life would not have injured the value of Dr. McDougal's book. As an illustration he quotes from the "Botanisches Zeitung" for 1891, and from it copies an illustration of a pine branch that had curved though the wood was made five years ago. If Dr. McD. had been as familiar with American observations as with German, he would have credited this discovery to Professor Bessey, of Lincoln University, many years ago. Again, had he been a reader of the proceedings of the Academy of Natural Sciences of Philadelphia, he would not have printed all the nonsense about *Lactuca Scariola* (not *L. scariola* as printed) that he dwells upon so much. In view of the fact that the Prickly Lettuce is *not* a compass plant, the explanation that it is a compass plant by reason of the "phytolytic movements of chloroplasts in exposed cells, paraphototropic reactions, and photeotic, or nyctitropic movements of leaves" seems amusing. It reminds one of the learned explanations given for the fact (?) that we may pile any quantity of living fish in a vesselful of water without the water flowing over the sides!

The weaknesses evident in this book, seem, however, common to all of the class. Very few of them are up to the times, and the newer works seem only apologies for what has been done, while preparing material for further apologizing hereafter. One may fairly say that the book is a good one, and will be welcome to the class for whom it is written.

JAPANESE VARNISH.—The English name for *Ailanthus glandulosa*—Japanese Varnish—is a most inappropriate one; it is neither Japanese nor a varnish tree. C. W. G.

The Japanese Varnish Tree—that is, the tree from which the Japanese get the lacquer varnish—is *Rhus Vernix*. *Koelreuteria paniculata* has also been called Varnish Tree. It is hard to keep up with these mixtures of common names. Botanists get confused with their Latin ones at times. Even our scholarly correspondent does not seem to have noticed the grammatical error in the specific name. The name intended by the original author was *Ailantus*, which is feminine—when *glandulosa* would be all right. But *Ailanthus*, as incorrectly used, being masculine, would require *glandulosus*.

YEAR BOOK OF THE UNITED STATES DEPARTMENT OF AGRICULTURE FOR 1900.—This issue has for a frontispiece a portrait of the late William Saunders, for many years head of the experiment ground. This, with an account of his life-work, is one of the best tributes to the memory of this deserving man that we have seen. The full and complete history of the introduction of the Date Palm to our country is especially interesting by reason of recent inquiries in regard to its propagation. In this issue MEEHANS' MONTHLY is able to add to the information given in the year book in regard to this. The fig chapter is particularly instructive in view of what has been written in regard to the necessity for fertilization. It now appears, what few if any of us knew before, that the fine Smyrna Fig, that withers if not pollenized by the Fig Wasp, is wholly pistillate, and we are to infer that the figs of our garden that fruit freely without the fig insect have some few male flowers in them. It will now be in order to examine the fruits of the figs to see if the seed is really perfect or not. A few minutes with an exact fact is worth pages of speculation. On the whole this volume of the Government year book is one of the most valuable of the series.

OUR FERNS IN THEIR HAUNTS.—By Prof. Willard Nelson Clute, New York: Frederick Stokes Co.

Some writer has said that it should be a penitentiary offense to issue a new book on an old subject, unless it tells us something new, or presents old subjects in a new light. Considering how many popular works have been issued regarding ferns, the writer indicated might be prepared to indict the author of this. But he would be agreeably disappointed, for it seems as fresh to the reader as if a popular work on ferns had never been issued before. All our native ferns are figured, and all about them told in a taking, pleasant style. Undoubtedly the book will have a wide and ready sale among fern-lovers everywhere.

HENDERSON'S PICTURESQUE GARDENS AND ORNAMENTAL GARDENING.—Illustrated by Charles Henderson: published by Peter Henderson & Co., New York. To say this is one of the most useful and beautiful works of the times on practical landscape gardening is no more than due to Mr. Henderson. There are several hundred illustrations of beauty spots in large and small gardens that afford admirable hints for those who would make beauty where plainness only ruled before.

SUGGESTED BY CLARKIA.—The lateness of the season in the garden, on account of the cold and wet weather we have had all during spring, must also be responsible that I too was late in reading the May number of your valuable magazine. I beg to be excused when I also so late offer my congratulation on the seventy-fifth birthday of Mr. Meehan, Senior, with the wish that his useful life may for a long while be spared to enjoy the beauties of this world, which are so abundantly around us if we have an eye for them, which is truth realized by you.

The main picture in your MONTHLY is the *Clarkia*, and as I saw it, memories of my first garden bed I had as a child returned as fresh to my mind as if I had it only a little while ago. I must tell you of it; perhaps it will stir the hearts of some of your readers to provide some places for the children to dig in the ground and plant something, however simple a seed or plant it may be.

I have often been asked how it came that I knew so many flowers and all about the garden. It is as natural to me as the air we breathe, and all I know has come in the way of no special effort or training—only to be active and industrious from earliest youth—such was my bringing up. One spring it was decided I should have a flower bed of my own, and my father circled off a round place under the big pear tree, where nothing else would grow—so was said. But I made it bloom the first season, and many a small bouquet from it was carried to my teacher at the school. I could not keep all the beauty to myself which grew there, and to it belonged the *Clarkia—Schöne Clarkia*, as the young student at our high school, who gave me the plants over the hedge from his mother's garden adjoining ours, told me the name it had ("Schöne" is beautiful), and *Schöne Clarkia* only it has been with me in German ever since. It must be now nearly fifty-five years ago, and not long after they were brought as a beautiful variety

from this country to my native Germany. Of botany, I did at that time know very little, except what we learned at school in natural history lessons, which included all nature, of animals, insects, fishes, plants, the earth and all it was made of and contained, and consequently was limited in the single branches, as could not well be otherwise, only giving a general idea of the most necessary things worth knowing.

But I assure you, my *Clarkia* I raised was far prettier and larger in flower than your picture in the MONTHLY. Am I partial? A little, perhaps, but the single blossoms of mine were as large as a half silver dollar, at least, and of a color the clearest resemblance to those shades of the *Rhexia Virginica*, or Meadow Beauty; the stems a shade darker and the whole an airy, beautiful blossom. And while I have some space yet left here, though it is personal, shall I tell you what became of the youth who loved the flowers so well? He being the oldest son of a minister's widow, with a large family and a small income, set out, after his graduation from the high school, as one of the pioneers to settle in our American Great West, and the most interesting news of him which came afterwards was when he wrote to his mother, "We have built us a log cabin (a block house) and, as a great luxury, I have brought home, from a hundred miles' journey, for my wife, a bureau with drawers and two real chairs for us to sit on." Truly the rulings in this universe are wonderful to contemplate. The migration of nations, which started in Asia Minor four hundred years after Christ, and rested for centuries in Northern Germany, was set in motion again to people this continent, and the hard-working tillers of the soil have a great share in its rapid and most rich and fair development. *Let us all not forget this.* I beg you to excuse my long letter, but the memory of the "*Schöne Clarkia*" is responsible for it.

Hartford, Conn. MRS. WILHELMINE SELIGER.

[The larger-flowered Clarkia referred to by our correspondent is probably *C. pulchella*.]

"FUNGOUS" AND "FUNGOID" DISEASES.—It is surprising that scientific people, of all classes, should so loosely employ misleading terms. For a long time they were persistently telling us about "fungoid" diseases,—that is to say, a disease that is like a fungus,—but the persistent showing up of the absurdity of the phrase by the conductors of MEEHANS' MONTHLY has caused the general dropping of the "fungoid" expression. But they have substituted for it one no less meaningless. They are now "fungous" diseases—that is to say, a disease of the character or consistence of a fungus! After a while they will come to see that fungus disease, that is to say a disease in relation to or in connection with a fungus, is a much better expression.

In connection with this, it may be noted that the Bulletin of the Connecticut Experiment Station has an exhaustive bibliography of "fungous" diseases. Over one thousand references are given to works where some "fungous" disease has been described. The name of the disease the plant affected, and the botanical name of the "fungous" is given. It will be perfectly bewildering to the practical man, though of great value to abstract botanical science. Nearly every plant is given a special name for its "disease," and almost all a special "fungous" acting on it. When it is known that copper solutions are effective against any and all of these "fungouses," it is hardly worth the while of the cultivator to burden his memory with over a thousand new names—many of which even the botanists themselves can scarcely remember without reference when they desire to discuss "fungous" subjects.

AMARYLLIS HALLII.—The volume of "Garden and Forest," cited on page 92 of MEEHANS' MONTHLY, gives a full record of the origin of the name Amaryllis Hallii, by the lamented botanist Sereno Watson, to whom we are apparently indebted for the identification of this plant with *Lycoris squamigera*. Watson states that *Amaryllis Hallii* was brought originally from China by Dr. George R. Hall, of Bristol, R. I. It was distributed by Messrs. Hovey, the Boston seedsmen. Dr. Hall had it in his garden before 1860, and he states that it is often planted by the Chinese in their cemeteries. The name *Amaryllis Hallii* was perhaps never formally described as such in regular botanical sources, but it must be regarded as fully accounted for in the proper way by a competent botanist. WILHELM MILLER.

Ithaca, New York.

THE CHEROKEE INDIANS.—A visit I made to the Cherokee reservation interested me greatly. There little sharp-roofed log cabins were the first thing that attracted my attention. Inside, they have beds, chairs, tables, tableware and cooking utensils. I was very much surprised when the lady of the house poured me out a nice cup of coffee at the dinner of bread, beans and bacon. "Yes," she said, "we Injuns drink coffee."

The women folk love bright colors in dress and gaudy jewelry. The men have about given up the chase; they fish a good deal yet. They work at odd jobs once in a while—at least until enough is earned to buy another cheap suit of clothes, and then they take up their lives of loafing again.

To the women is left most of the work in the patches of corn, beans and potatoes. We met an old Indian on our way. "O see!" said our driver, trying to show off his knowledge of the Indian tongue, "Good-evening, Mr. C.," replied the old fellow in the most dignified way.

We lost a small piece of our harness and could go no further, so we all dismounted to search for it. A small Indian boy followed slowly along behind us searching every inch of ground, and in a few minutes he picked it up and held it out. He seemed very proud of the money he received for his help.

They have a good school at Yellow Hill, supported by the Church of Friends.

There were three nice buildings when I was there, a boys' dormitory, a schoolhouse and the main building, which contained a chapel, girls' dormitory, parlor, dining-room for all, kitchen and apartments for the teachers.

There were forty-two boys and girls at the school, learning, besides the common English course, housekeeping, cooking, sewing, farming and mechanics. There were some very bright pupils—some very dull, as in all schools.

The children said, when they went home on visits their parents wished them to speak "Inglus," so the younger ones could learn it. There are some very quaint sayings on record. A little girl cried out with pain and when asked what was the matter said the bed had stepped on her foot. Another, when she saw the tea-kettle boil over, said the water was running away. Another was being taught the catechism. "How many persons in the Godhead?" replied, "three, the Father, the Son and the Moon." M. M. Y.

GENERAL NOTES.

POTATO BUTTONS.—We have real ivory and vegetable ivory, and not many years since, the threatened ivory famine produced that remarkable imitation we know as celluloid, which has been successfully employed for every possible use, from billiard balls to piano keys To-day the imitation has itself been imitated, and that, too, by a curious preparation of potato pulp! The inventor is a Dutchman named Knipers. He treats the waste pulp, itself a residue from the manufacture of the artificial potato flour, with a solution of acid and glycerine. The resulting compound takes the form of a species of stickfast, which is dried and ground to powder. This powder is moulded into blocks, with the aid of water, very much as one uses plaster of Paris. There is, however, this important difference. The new compound can be cut and turned and bored and used for every purpose, from buttons upwards, in which it was formerly customary to use bone and ivory.—London *Journal of Horticulture*.

CITY TAXES.—It is said there are towns in Germany which are free from taxation by reason of forest profits—forests owned by the city corporations. American cities daren't own anything. When the writer opened a campaign for small parks in Philadelphia, the plan was to take a large tract, make a small park of a portion, and then sell the adjacent properties at improved figures to buy more plots with. But the law department decided that the city could not enter into real estate operations. Indeed, it is doubtful whether any city in America can do anything long but raise taxes on real estate. Small towns can do better than larger ones. When they grow to a size that "nobody knows who's who," except as designing persons tell them, ignorance, or even corruption, rules. Imagine any of our large cities running a forest for revenue!

BULBLET ON TULIP STEM.—Prof. Waugh, Vermont Agricultural College, sends a tulip stem with a bulblet—we might say a fine bulb—growing from the axis of a stem-leaf.

RENANTHERA COCCINEA.—One of the grandest of the orchid family in bloom in the greenhouses of Miss Helen Gould, at Irvington-on-Hudson, N. Y., in the early part of July, was the Chinese *Renanthera coccinea*. To say that there were many hundreds of its large, red, butterfly-like flowers on the one plant is no exaggeration. Mr. Ferdinand Mangold is the able gardener in charge of these plants.

PLANT NAMES.—The objection is often made that the names given by botanists are hard to learn, and therefore common names, as they are called, are excusable. But reflection will show that this cannot be the real reason, for many, like Rhododendron, Chrysanthemum, Dahlia, and others that might be named, have become common, though hard enough for any one to learn. The real reason is the fear of being thought affected—it seems like using Latin sentences in the every-day affairs of life. There is some good ground for this feeling; but unfortunately it has been nursed to such a foolish extent that utter ignorance of all solid knowledge has come to be the chief recommendation in polite society. This is well illustrated in a report of a select library in Philadelphia, established by ladies of what is known as the better class, mainly for persons in their own sphere in life. Of the 2831 books taken out in 1900, 426 represented magazines, poetry and essays, juveniles 45, French 5, history and biography 202, science and art 8, fiction 2109. Fiction undoubtedly has a legitimate place among the pleasures of life, but it requires more courage than human nature is credited with for eight ladies to use the language of science or art among 2109 novel readers.

SHADE AND SUNLIGHT IN VEGETABLE GROWING.—In the long past, the writer had an interest in a legal trial. The attorney for one side proposed to his client that he would raise a certain point in the argument. When asked if it was not absurd, the reply was that he believed the judge and jury, the other side included, would know no better—and the lawyer did win his case. All this penalty of ignorance is continually being paid. In a Pennsylvania case, recently, the question turned on the value of ground taken for street purposes. The owner used the ground for market gardening purposes. The special road jury awarded him $3000. The street had to be elevated above the normal level of the ground. The owner of the ground appealed to a higher court for $6000 additional, on the ground that he not only lost this much ground, but that the embankment, probably fifteen or twenty feet high, shaded the rest of his ground to a damage to the crops—and the jury awarded him the additional sum!

SMALL PARK GIFTS.—The gifts of valuable tracts of land in the vicinity of crowded towns and cities for small parks and recreation grounds have become frequent, of late, both in America and the Old World. The London papers recently announced that a Mr. Horniman, whose property was within the corporate limits of that great city, had deeded his mansion, house and grounds to the city for a public museum and small park. The grounds covered nine and a half acres, and are estimated as worth between a quarter and half a million dollars.

CUT FLOWERS IN AMERICA.—A paragraph going the rounds says: "The Agricultural Department gives some interesting statistics showing the surprising growth of the cut-flower business in recent years. The retail value of cut flowers sold annually is now $12,500,000. Of this no less than $6,000,000 is paid for roses, $4,000,000 for violets and $500,000 for chrysanthemums." Roses and violets are popular; but it seems incredible that ten million out of twelve should go for these two items alone. Can it be possible that twice as much money is spent for violets alone, as for Orchids, Carnations, Lilies, Daffodils, and all other flowers, roses not counted?

FIRE-PROOF WOOD.—Reference to the growth of knowledge in regard to making wood incombustible has occasionally been made in the columns of MEEHANS' MONTHLY. The United States Government, looking to the interest of the navy, finds that wood can be rendered fire-proof in various ways, but that the wood is reduced to such a brittle condition as to be rendered useless for all purposes where a fire-proof character would be most desirable.

CALLICARPA AMERICANA.

Lithotint Monthly by J. Prang & Co.

CALLICARPA AMERICANA.

FRENCH MULBERRY.

NATURAL ORDER, VERBENACEÆ.

CALLICARPA AMERICANA, Linnæus.—A shrub, two to five feet high, the twigs and young leaves stellate-scurfy, the mature leaves glabrous or nearly so, and glandular-dotted. Twigs terete; leaves thin, ovate, pinnately-veined, slender-petioled, acute or acuminate at the apex, crenate-dentate nearly to the entire base, three to six inches long, one and a half to three inches wide; cymes many-flowered, short-peduncled; pedicels very short; calyx teeth much shorter than the tube; corolla pale blue, about one and a half lines long; fruit violet-blue, globose, about a line and a half in diameter, very conspicuous in autumn. Britton and Brown's *Illustrated Flora of the Northern States and Canada*. See also Gray's *Manual of the Botany of the Northern United States;* Chapman's *Flora of the Southern United States*, and Wood's *Class-book of Botany*.

The beautiful family of Vervaines, or, as we say, *Verbenaceæ*, comprises some seventy-five genera, and are widely scattered over the four quarters of the globe; but, as genera, the family has not a large representation among the native flowers of the United States, *Verbena*, *Lippia*, and our present subject, *Callicarpa*, covering most of the ground. Indeed, the last named has but the one species to represent it, and this, *Callicarpa Americana*, has but a slender title to a position in the United States Flora, being confined to the comparatively small territory between Texas and Arkansas, and from Virginia to Florida. It is not recorded to have been found north of the Potomac. The species, however, become more numerous as we go southwardly, a large number having been described from Mexico, Brazil, and contiguous regions. Strange to say, a species, native of Eastern Asia, is so closely related to ours that the two were once believed to be identical. It is remarkable that so many comparatively local plants, on the eastern seaboard of our country, should be found in this part of Asia, with so many thousand miles between, wherein no close relatives are found.

Our plant has reached a popular position among the native flowers of the United States by reason of the beautiful violet-blue berries which it produces in the autumn, and which continue attractive till far into the winter season. Indeed, in the far south, where severe frosts are rare, they give a cheerful character to the floral scenery until spring returns again. The flowers, as seen in our picture, are borne on cymes in the axils of the leaves, but, as the berries enlarge, they occupy so much space that they appear as if in verticils around the stems. In addition to the part the berries take in adding beauty to the autumn scenery, the leaves also add largely to the effect by the lively tints they assume at that season. The brilliant fruit has attracted the botanist as well as the popular lover of flowers, which is attested by its name, *Callicarpa*, as given to the genus by Linnæus. This is derived from two Greek words, *kallos*, beauty, and *carpos*, fruit,—the application in this case being apparent. The common names also have relation to the same characteristics. Willdenow, the leading follower of Linnæus in the reorganization of botany, translates for his German readers the Linnæan name, and applies the term "Shönbeere" to the whole genus. Nuttall says in the South the common name, in his time, was Bermudian Mulberry; Barton notes it as Barbadoes Mulberry; Rafinesque says it is "Somerbush,"—but all modern authors term it French Mulberry. It may be here noted that, while botanical authors are particular in searching out and adopting the prior scientific names of plants, they seldom give the same attention to popular names. It has come to be a belief that a botanist, in scientifically describing anything, must at the same time present a common one. In many cases one is invented for the occasion, though, with a little diligence, names really common might be found to have been already given in abundance. It is the great number of common names for a particular plant that renders

COLOR PLATE

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identification difficult. Outside of this they are often desirable, and serve in many cases to indicate the popular impression of some peculiar characteristic of the plant. In the present case, we may assume that the term mulberry has relation to some similarity between a cluster of berries and that fruit,—but why a French Mulberry or a Bermudian Mulberry, is a thought worth investigating. In like manner, the name "Somerbush," as quoted by Rafinesque, may have a deeper meaning than would appear on the surface.

In connection with the name of Somerbush, which Rafinesque gives as the common name, he states, in his "Medical Flora," that the "purple berries dye wool purple with alum. They are edible, sweetish, and astringent. Leaves useful in decoctions for dropsies." In relation to this, Dr. Francis Peyre Porcher says, in his "Resources of the Southern Fields and Forests:" "This is said to be useful in dropsical complaints. It bears very pretty red berries, growing in whorls around the stem, which are slightly sweetish to the taste. I could not extract much coloring matter from their skins with vinegar or alum" Dr. Royle says that a closely related species is employed in medicine by the East Indian natives; and Dr. Lindley remarks, on the same species noted by Dr. Royle, *Callicarpa lanata*, that the bark has a peculiar subaromatic and slightly bitter taste, and is chewed by the Cingalese when they cannot obtain Betel leaves. He further adds that the Malays reckon the plant diuretic. There may be more medical virtue in our plant than has been heretofore discovered.

The reader will have noted how varied are the views of different authors as to the color of the berries. Mr. J. W. Chickering, Jr., describing, in the "Botanical Gazette" for 1879, a beautiful piece of scenery near Fortress Monroe, in Virginia, and noting the plants that entered into the pretty picture, says that the *Callicarpa* was prominent, "with its showy axillary clusters of purple fruit,"—and this probably will characterize the tint as represented in our illustration.

In regard to the general history, it was probably among the earliest to attract attention. Its brilliant fruit would be readily noted. As early as 1700, Dr. Leonard Plukenet figured it in his "Phytologia," a branch from either specimens or drawings, in all probability, sent from Virginia, in 1680, by the Reverend John Banister. It appears in Plukenet's work as *Anonymos baccifera verticillata*. Mark Catesby, who published a history of Virginia and Carolina, in 1743, figures it and describes it as a verticillate, berry-bearing shrub,—the purple berries densely congested. Gronovius, a couple of years later, describes it from specimens received from John Clayton,—the berries this time described as "crimson-purple, smooth, splendid, and particularly showy in the autumn season." It was Linnæus, in 1741, who gave the genus the name it now bears. Living plants, through Catesby, were introduced to England in 1724.

The young botanist who may be studying the nature and structure of the organs and members of plants, especially in connection with classification, will find, in *Callicarpa*, excellent material. Much has been told of it, but more probably remains to be discovered. The natural order of *Verbenaceæ* is separated from other orders by very slender lines. They have very much in common with Borageworts and Labiates. From the latter they differ in having the carpels so united as to have them appear as one concrete berry, as in the case of our plant, for instance. We may say that a slightly different degree in the power of union makes all the difference. From Borageworts they differ in having but four instead of five fertile stamens, although the ovary has four segments only, as in *Verbenaceæ*. It is simply a case of suppression of an organ that might have been present. The carpels in the Boragewort are wholly separated from each other and admit of a depression in the style, while the *Callicarpa* and other verbenas have the four concrete. All these points have been noted by other botanists. But there is still another natural order that has not been brought into comparison, namely *Monimiaceæ*, closely related to the nutmegs. In most systems of classification, these would be placed far away from Verbenas, because of their numerous stamens and tendency to have flowers of separate sexes. This is an uncertain character.

EXPLANATION OF THE PLATE.—1. Branch from a summer growth, furnished by Mr. Jackson Dawson, of the Bussey Institute. 2. Fruiting fall specimens from Virginia. 3. Flower enlarged, showing the general characters of the various parts. 4. Section of the berry, showing the four-seeded structure of the concrete ovarium.

WILD FLOWERS AND NATURE.

AFTER THE STORM.

How calm, how beautiful comes on
The stilly hour, when storms are gone;
When warrior winds have died away
And clouds beneath the glancing ray
Melt off, and leave the land and sea
Sleeping in bright tranquillity,—
Fresh, as if Day again were born,
Again upon the lap of Morn!
When the light blossoms, rudely torn
And scatter'd at the whirlwind's will,
Hang floating in the pure air still,
Filling it all with precious balm,
In gratitude for this sweet calm;—
And every drop the thunder showers
Have left upon the grass and flowers
Sparkles, as 'twere that lightning-gem
Whose liquid flame is born of them!

THOMAS MOORE.

VITIS INCISA.—As I have collected *Vitis incisa* in Texas, I would like to mention a few places where I have found it there. First, I saw it June 23, 1899, in the garden of the old explorer of Texas flora, Mr. Reverchon. He planted it in Southern Texas and in his garden. On the sixth of April, 1900, I found it myself on the banks of the Guadalupe River, near Victoria, Southern Texas. On the sixth of September, 1900, I found it, near St. Antonio, in fruit. From the tenth to thirteenth of September, I found it quite often on the banks of the Rio Grande and Devil's River.

E. St. Louis, Mo. HENRY EGGERT.

SELF-SACRIFICE IN NATURE.—To the mind of the writer of this paragraph, one of the weaknesses of the hypotheses of Darwin, Spencer and others, in regard to the "struggle for life" and the "survival of the fittest" as factors in evolution, involves a law of intense selfishness which is not supported by the evidence furnished by a broad view of nature. It has been his privilege to show, in papers read in the past before the American Association for the Advancement of Science, that selfishness in nature is subordinate to self-sacrifice. In a recent review, in the *Journal of Microscopy*, of a German work by Dr. Mühlmann, on human physiology, the reviewer, Prof. Raymond Pearl, of Ann Arbor, Michigan, it is remarked that the author is strongly opposed to a teleological consideration of life-phenomena, and, in order to escape some of the difficulties along this line which his theory involves, he advances some astonishing physiological principles. An example will indicate the nature of these. It is stated that "Saliva is a product of the regressive metamorphosis of the poorly-nourished cells of the salivary gland, and is *useless* to the organism." But surely the saliva is of no service to the cells of the salivary glands that produce it, except in a very small and indirect way. It aids in preparing food, by which it is itself supported,—but the far greater portion of its work is to support other cells in which it has no direct interest. There seems no getting away from the common-sense proposition that, if there be arrangements for eating, something must have been designed to be eaten,—that, in fact, death as well as life is a wise provision of nature.

CLINTONIA BOREALIS.—In the early part of May, I walked out to the woods to collect a few *Dodecatheon Meadia*, or Shooting Stars, to plant in my wild-flower garden. In taking them up, I cut out a clump of earth with the roots and brought them home in that shape, so that they would not receive much of a check to their growth and blooming qualities. They were already showing their blossom buds. Some time afterwards, I noticed a small plant of two narrow leaves, with a greenish yellow perianth (outside of the perianth); inside, it was a bright golden yellow. It had the marks of the lily family. I hunted through Dr. Gray's Manual for its name, and *C. borealis* answered nearer to its looks than any other plant. *Clintonia borealis* was found growing on one of these clumps of earth, beneath a *Dodeca-*

theon Meadia. There were several differences from Dr. Gray's description. It is not ciliate-leaved, but they are long,—about ten inches,—narrow, a little wider than Blue-grass leaves and smooth. There were two scapes on this plant, three and four inches long; one produced two flowers, the other formed none,—maybe was injured or was hurt in the removal. This plant, with the *D. Meadia* and the *Viola pedata*, variety *bicolor*, grows on the northern slopes of the hills, in this mountainous country. It is a plant which I have never met with heretofore, and would not have seen it this time if I had not unintentionally brought it home. Dr. Gray says its habitat is "cold, moist woods in Massachusetts and Wisconsin and northward and southward along the Alleghenies."

Festus, Mo. F. K. STEELE.

STERILITY OF HYBRIDS.—Scientific men are fond of throwing it up to practical people that they are behind the times; but devotees of science are often among the crowd that live in glass houses and yet throw stones. Horticulturists have long ago learned that hybrids are as fertile as their parents; and orchids, gesneriaceous plants, and many other classes furnish abundant evidence. But that hybrids are sterile, or generally sterile, is still a doctrine on which many pretty "theories" are founded by leaders in science.

GROWING PLANTS REPRESENTED BY PHOTOGRAPHY.—We are doubtless the first to tell of the curious application which may be used, by the sinematograph and chronophotograph in general, to synthetize, in some instances, different successive growths of a plant or flower.

The U. S. Dept. of Agriculture is making ready to put, to practical use, this original idea. A chronophotographic apparatus has been placed in one of the division beds of vegetable pathology, the mission of which is to take successive numbers of photographs of quite a small oak. It is needless to say that the functionary is automatic.

It takes one photograph every hour, even at night, at which time it is supplied by electric light. It can continue taking pictures this way to the end, and has the power of throwing on a screen the development of a small shrub from the time it appears above the ground until it is a real bouquet of leaves; it has been proposed to apply the apparatus and methods to observing plant sicknesses, of all kinds, which destroy vegetables, in order to make instructive projections in schools and stations where agriculture is taught.—*Nature*.

WILD PARSNIP AND RADISH POISONING.—We read, occasionally, in the newspapers, about wild parsnip poisoning. It is well known that the Water Parsnips, *Sium lineare*, *S. angustifolium*, etc., are poisonous when eaten. The Cow Parsnip, *Heracleum lanatum*, is said not to be poisonous; but I, for one, would not care to eat it. The Meadow Parsnips, *Thaspium*, of various species, are considered harmless. Some people call the Water Hemlocks (*Cicuta* sp.) by the name Cow Parsnips. They are virulently poisonous. But I do not think it is very well known that the common Garden Parsnip, *Pastinaca sativa*, when it runs wild, becomes a skin-poison, somewhat after the manner of *Rhus Toxicodendron*. It is especially poisonous when the dew is on; but when dry is said to be entirely safe. Upon children's hands and feet, this wild parsnip will set up quite a smart rash; but a wash of salt water is said to be a speedy cure.

It is perhaps not very well known that, in some circumstances, radishes, and especially the black radish, are said to be poisonous. The European Wild Radish, *Raphanus Raphanistrum*, is considered to be somewhat poisonous. In our country, it has become a great pest in the oat fields, but I never heard of its poisoning anybody. In Japan, radishes are largely eaten by all classes, and there, if anywhere, radish poisoning ought to be looked for.

Merchantville, N. J. C. W. GREENE.

[Remembering how much error exists in determining the plants in poisoning cases, specimens were procured from the doctor, in attendance on a fatal poisoning case by "parsnips," at Danville, Pa., a few years ago. There could be no doubt of the specimens of the roots being identical with those which did the poisoning, as one of them had the teeth-marks of the children. These were planted, and grew to be the real garden parsnips. Just why they should be more injurious, in a wild condition than in a cultivated one, has not been explained.]

GENERAL GARDENING.

MY GARDEN.

I love my garden! dearly love
That little spot of ground!
There's not, methinks (though I may err
In partial pride), a pleasanter
In all the country round.

MRS. SOUTHEY.

SHARING THE PLEASURES OF BEAUTIFUL GROUNDS.—Though a very rare occurrence, there are a few unselfish men willing to run the chances of vandalism and throw open their grounds to the public that they may appreciate and enjoy the beauties of flower and landscape. Doubtless there are many who would not refuse entrance, and it is the number who invite that is small. To the latter, great credit is due for the refining influence that results from touch with the beautiful in nature. They are the same results that have taught the advantages of public parks and playgrounds.

A Sussex naturalist, writing to the London *Gardeners' Chronicle*, says that, "Through the courtesy of W. James, Esq., the lovely grounds of West Dean are open to the public on Tuesdays and Thursdays during the month of June, when the arboretum is in its pride and glory. As the house and church have many interesting associations, the visitor whose taste runs in the direction of archæology and local history, as well as natural scenery, botany and floriculture, will find much to please him. The situation is delightful, nestling, as it does, in a charming valley or den (whence the name of the village), with splendid forest trees, and a rich profusion of wild plants on every hand. The privilege of visiting these lovely grounds is greatly appreciated by the people of Chichester."

In our own country, the summer residence grounds of Hon. Jos. H. Berry, Grosse Pointe Farms, Mich. (suburbs of Detroit), we understand are similarly open to visitors, but at all times. Though quite different from the English place described, both in size and character, the pleasure to the visitor is none the less, for Mr. Berry has a great abundance of flowers and fine young specimen trees. The conservatories contain a wealth of ferns and foliage plants tastily and uniquely arranged at the hands of Mr. Fruck, the gardener.

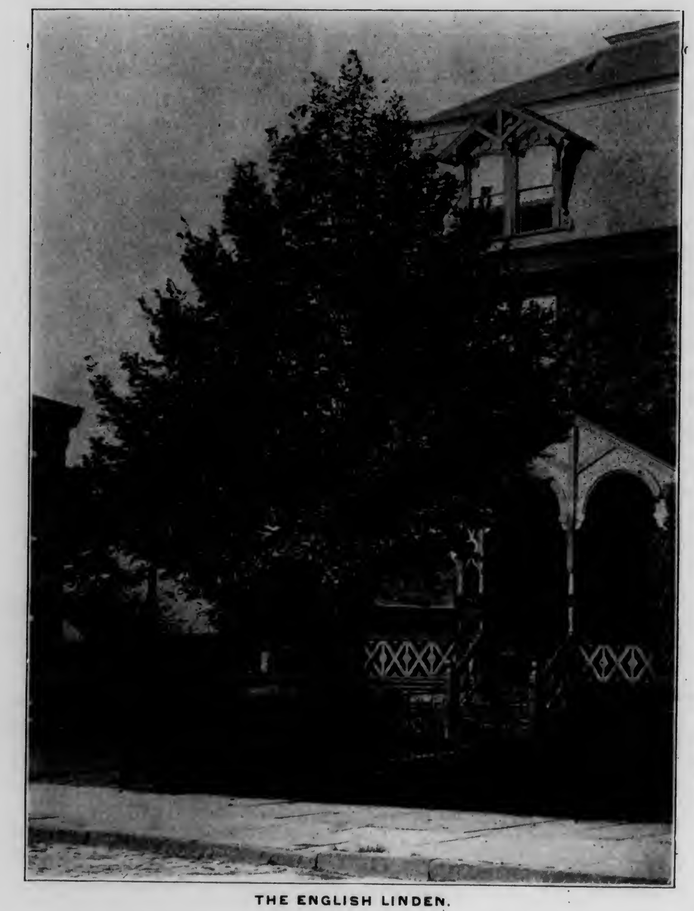
Some famous grounds in the vicinity of New York, made public for many years, have been closed recently because of vandalism. It is to be deplored that, by the acts of a few people unsusceptible to the better influences of nature, the general public is cut off from so much healthy enjoyment.

It is to be hoped that many other owners of beautiful places may, at least, experiment with the sharing of the pleasures which their grounds afford.

THE ENGLISH LINDEN.—Some forty years ago Mr. Thomas Meehan published a paper, in the Proceedings of the Academy of Natural Sciences of Philadelphia, that attracted some attention at the time, showing that closely related species of the trees of America and Europe differed from each other in one uniform line. Mr. Darwin, in his work on "Plants and Animals under Domestication," frankly admits that the facts are not intelligible under his speculations regarding the origin of species,—nor have they been explained to this day. For instance, the practised eye can tell the European Linden from the American by its close, formal habit,—and oaks, ashes, beeches, and all other classes of trees can be distinguished in like manner. The accompanying illustration of an English Linden, growing at the suburban residence of Dr. Van Horn, in Germantown, shows how close and formal it grows. The American, in a similar fifteen or twenty year old specimen, would be so "sprawly" that one could almost see through it.

This neat, refined habit of growth gives the English Linden a high character in some styles of gardening, especially when in company with buildings and formal grounds. In many respects it is a justly favorite tree with

planters. At Newport, R. I., it has proved itself one of the most satisfactory ornamental trees for that locality, where considerable difficulty is experienced in establishing trees in proximity to the seacoast.



THE ENGLISH LINDEN.

THE LIFE-PLANT OF GUADELOUPE.—Under this heading, recently appeared a paragraph in all the leading daily papers of the United States, sent out, by the State Department at Washington, as a document of national importance :—

"Consul Ayme, of Guadeloupe, has sent, with a report to the State Department, dated December 24, 1898, some leaves of a plant growing wild on the island, which he calls the 'life-plant,' on account of its peculiar properties. Mr. Ayme says :

'If any leaf be broken from the plant and pinned by the stem to the wall of a warm room, each of the angles between the undulation of the leaf margin soon throws out a number of very white, threadlike roots. Next, a tiny plant begins to sprout, which, in the course of two or three weeks, attains a height of two or more inches. When the original leaf begins to shrivel, which may take from six weeks to three months, the small plants may be cut out with scissors, and planted, or the whole leaf buried, when the young plants will rapidly attain full size. When cultivated, the plant attains a height of four feet, and produces graceful red and yellow flowers.

'I believe that this plant could be successfully grown as a house plant, and certainly in any ordinary greenhouse. I find that old and new leaves sprout with about the same readiness.'"

Of course, every intelligent lover of gardening recognizes at once our old friend, *Bryophyllum calycinum*, which, for a hundred years or more, has been one of the commonest plants in our gardens, and has become naturalized in all subtropical parts of the globe. Even in our own country, they can be gathered by the cart-load in Florida.

It is not surprising that there is such a lack of intelligence exhibited in so many of our public parks and gardens, when the Government at Washington, with a mighty force of botanists about them, sends out a document like this.

HETEROGENEOUS GRAFTING.—Horticultural journals are giving currency to a statement that M. Bonnier showed that plants of entirely different families had recently been grafted with success—for example, the maple upon the lilac, the kidney bean upon the castor oil bean, and the cabbage upon the tomato.

This was at the Paris Academy of Sciences. Statements such as these, wholly opposed to the experience of practical men, should not be trundled around without a word of caution. Years ago, a correspondent of the writer, a gentleman of character and caution, wrote that he had succeeded, in Florida, in grafting the Japanese Persimmon on the oak. He was asked for specimens, and kindly sent some. Truly, the scions had budded forth to young branchlets,—but a close examination showed that there was no actual union. The scions fitted tightly in the cleft made in the oak plant, and had managed to suck in enough moisture to permit the pushing out of the growth. They sprouted just as they would have done had they been in a vessel of water. They were dead before the season was over. One may not say Professor Bonnier is wrong,—but may say that unlikely things should be closely tested before being given out as facts.

BIRDS AND INSECTS.—PINUS PALUSTRIS.—In reference to the English Sparrow, am forced to say, with regret, he is a rough—maybe not intentionally, in the mischief he does, but it is a fact. I have found him out to be one of the principal agents in the distribution of the dreaded San Jose Scale insect, and he is mainly responsible for the wide localities infested hereabout.

All my peach trees are greatly infested, and the branches, which I can reach, and which had such fine fruit, and plenty of it, last season, and also set buds for next summer's crop, are all dead now, killed by the scale. I am certain of that. As I have no nursery-grown trees of any fruit variety on our place, but have raised all my trees, apples and pears, cherries and plums, from seed planted by me, which are all in bearing, set out twenty years ago, I cannot otherwise account for the scale, but that it has been brought to our locality by nursery stock in the Keney Park, or other places further away, and then the sparrows have carried it all about, while swarms of them fly from one place to the other and, in their boldness, eat with the chickens, and alight constantly in the nearby trees. It is too bad. I hear that entire orchards are spoiled by the insect.

We have, at present (Jan. 15th), the effects of an ice storm on our trees, lasting already three days, with sunshine but no wind, and so the ice, an inch in thickness, clings to all objects, making a most brilliant sight of dazzling beauty, and I hope will check the scale also, though all fruit prospects seem also in danger.

I have published my observations, in our Hartford *Times*, about the sparrow and the San Jose Scale, and since, it is very evident that some means have been found by the fruit growers to exterminate him, and is at this winter season recommended to be continued before the song birds return in the spring. For a week or two I have hardly seen any sparrows at all, where only a short time ago were flocks of them.

Please allow me the question concerning the *Pinus palustris*, or Georgia Yellow Pine. Does it grow, or have any efforts been made to raise it, as far north as Philadelphia?

I saw, in Prof. Sargeant's "Silva of North America," that, in 1830, Michaux caused some seedlings to be transplanted in France, but without much success. Your authority and valuable experience in this line would be very instructive and interesting.

Hartford, Conn. MRS. W. SELIGER.

[The *Pinus palustris*, Long-leaved or Georgia Yellow Pine, has been planted several times in the Meehans' Nurseries, but without permanent success. One small specimen from North Carolina passed through two winters and then died. Like some other southern plants, possibly it only needs strength through protection for five or six years, when it would stand the winters perfectly.

It was long ago noted, in MEEHANS' MONTHLY, when the Canadian authorities established the embargo against American nurseries, that birds would defy the Custom House authorities, and the San Jose Scale would laugh at them. This has been found true. In spite of the drastic "Stamping out," as these methods are vulgarly called, there is as much San Jose Scale in Canada as in many other places on the American side of the line. The English Sparrow is no worse an offender

than many other birds,—not so bad, in fact, as some, as he does not travel so far.

It may be repeated here, what MEEHANS' MONTHLY has often expressed, that the San Jose Scale is no worse an enemy to the fruit grower than numerous other species of scale, except in the one point, that it seems capable of more rapid increase than some others. Its destruction is as easy as destruction is in any kind of scale. The intelligent cultivator does not expect to succeed without a continual fight against insects, weeds, small boys, and pests of various descriptions. He is rather glad that there are enemies to fight, as they weed out the inert cultivators, and bring greater rewards to the products of his intelligence and industry. The wagoner who cries to the Jupiter of the law to help him, gets his team out of the mud sooner by having his own shoulder to the wheel.]

ELDERBERRY--SAMBUCUS CANADENSIS.

EXTERMINATION OF MEDICINAL PLANTS.—The curse of professional root-diggers, who systematically traverse the country, devouring with the avidity of seventeen-year locusts, threatens seriously the annihilation of some of our medicinal plants. For the past few years, the demand has been especially for Ginseng, resulting in its almost complete disappearance from former haunts, after two or three seasons of this persistent thievery by traveling diggers. Blood-root has entirely disappeared, from this vicinity, within the remembrance of many; and Goldenseal is extremely rare; also Goldthread. All but the first of these plants were probably secured by local hunters. BESSIE L. PUTNAM.

ELDERBERRY BUSH.—Continuing the observations made in these columns from time to time, that much more might be made in landscape gardening than is made, by studying the special characteristics of trees with a view to harmonizing them with special conditions, the common Elderberry Bush, *Sambucus Canadensis*, deserves notice as a plant especially adapted to beautifying the lines of streams or water courses. They seem to love to grow in these situations. One of the pleasures of a small stream through one's grounds, is the air of coolness it suggests during the warm season. It is, of course, cool in the vicinity of a running stream,—but for all, it seems cooler than it really is. The Elderberry, with its huge umbels of white flowers, adds to this pleasant illusion. The accompanying sketch of an Elderberry-lined pond represents a scene in the Arnold Arboretum, near Boston, and was originally prepared by Mr. A. Rheder for Möller's *Deutsche Gartner Zeitung*.

INSECT PESTS.—Every country has its thorns, thistles, insects, and fungus pests, that make it difficult for the cultivator to get his bread without the sweat of his brow. According to the *Australasian*, of Melbourne, Australia, one of the chief insect pests of that region is one of the leaf-hoppers—or thrips, as it is more common to call them. Roses and other plants in the flower garden can scarcely be cultivated with great success without continual spraying with insecticides; and among the small fruits, the raspberry growers frequently lose 30 per cent. of the fruit through their attacks. It infests the blossoms, and causes such a malformation in the fruit as to render it useless.

NEW OR RARE PLANTS.

THE ENGLISH GOLDEN ASH.—Golden-leaved varieties of ordinary green-leaved plants are peculiar in this, that, while some give an idea of sickliness, others impress us as being models of healthful beauty, and are valued accordingly. The Golden-leaved English Ash is one of these desirable varieties. Probably it is because the shoots of this species of ash are always thick and seemingly vigorous, that the tint of gold in the variety has such a seeming appropriateness. The tree itself has a strikingly healthy and vigorous form. A good idea of this feature may be gathered from the illustration on page 138, which is from a tree about twelve feet high, and is on the grounds of John T. Morris, Esq., Chestnut Hill, Philadelphia.

TREE LOBELIAS.—Every one is familiar with the pretty, blue, annual species of our gardens, and many know the *L. cardinalis*, and *L. syphilitica* of our meadows,—but Lobelias, as trees, seem a remarkable condition in the history of these plants. The *Gardeners' Chronicle* notes that, in Abyssinia, they grow up with stems fifteen or twenty feet high, and look, at a distance, like palm trees.

THE HARDY FLOWER GARDEN.

PROPER LOCATIONS FOR LILAC BUSHES.—The suckering character of common lilacs should be borne in mind when deciding on their location. A slender, neat little plant this year will be a large clump five years hence, with a diameter at the base of perhaps four feet and with abundant capabilities of future increase.

Lilacs make effective screens—and especially in hedge form. Outbuildings are rendered more sightly by their use, while, at the same time, the wealth of bloom furnishes additional beauty to the scene and the very best kind of cut flowers for house decorations. This cutting of the flowers, by the way, likewise acts as a desirable pruning.

The "improved" named varieties of lilacs are frequently grafted on privet roots, in which case suckering does not occur unless roots are finally sent out above the graft.

HERBACEOUS PLANTS AND FERNS—HINTS ON THEIR CULTIVATION. — I am sure I have derived more pleasure from "herbaceous plants" than from any other. The herbaceous plants of our woods and fields are in great variety; and, although there are many most beautiful kinds almost exterminated, speaking of the vicinity of this city (Philadelphia), yet there are hundreds of sorts yet to be found, the looking for and finding the names of which would afford great gratification.

Referring to these as well as to the herbaceous plants of other countries, there is a deal of satisfaction to be derived from their cultivation. While, for the sake of masses of color, bedding plants will always be in demand, they will never occupy the place in the affections of the people that herbaceous plants do. The Veronicas, the Hollyhocks, the larkspurs and the columbines which grew in the garden of our boyhood we never forget. We got to know them then, to know the spot they occupied, and we eagerly watched for their appearance then as for that of some loved friend. It is this reappearance after their winter's absence that makes them so welcome to all.

It is so common to hear persons say, when viewing some woodland beauty, "How I would like to transplant it to my garden!" While it is true that but few succeed in getting such plants to flourish in their gardens, it is nearly always from lack of knowing how to make them feel at home. Let me mention the Trailing Arbutus, *Epigæa repens*, as an illustration. It is the common belief that this lovely flower cannot be transplanted, and

more than once I have corrected writers who have asserted this in public print. I have transplanted it successfully,—so have many others. Six summers ago, when in England, I saw a nice patch of it in the Bagshot Nurseries ; and many other large nursery firms there offer it for sale. It is not a native there, so that it follows that at some time or other the plants were safely transported from here, seedlings of it being rare. This plant likes shade and moisture and to be undisturbed. It would not thrive in the open garden, but if small, bushy plants with a good ball of earth

THE ENGLISH GOLDEN ASH.

be taken and set in a woodland where the required conditions exist, they will live and flourish.

With native plants, a little care should be taken to provide for them situations as alike as possible to those they have been accustomed to. There are shade-loving plants and those that have grown in open places. It often happens that a partly shady border is at command, where those that demand it can be placed. It does not always follow that a wild plant is found growing in the best possible place for it. Take, for example, the Scarlet Columbine, found on damp rocks along the Wissahickon (Philadelphia). I have seen better specimens of it in open places in gardens than ever I have seen wild, no doubt because the garden afforded better food than its native rocks did.

To those who have not tried it, it would be a great surprise to find how much better plants grow when the ground about them is well mulched. It makes the plants feel more nearly at home than anything else that could be done, save the giving of shade to some of them. Plants in the woods have shade above them and decaying leaves about them, and those in fields have grass or other plants about them, so that in both places the roots are cool. This is what mulching of the garden plants does, this and the preservation of moisture. Another thing rarely thought of is this. The wild plants in the woods are so covered with forest leaves that frost does not get to their roots. I am sure that all plants, hardy or not, are the better for this ; and I would mulch afresh in the fall, that the roots may have a winter covering. As herbaceous plants will repay good food given them, I would mulch with manure in the fall. Let it be long manure, the better to protect the plants ; the strawy portion can be raked off in the spring ; the remainder can be left undisturbed. It will be loose, and often it will be sufficient mulching for the summer.

Next to mulching, there is nothing like a constant stirring of the soil. Let me say here that I have found many workmen in gardens totally unacquainted with the principles of hoeing. The hoe is drawn over a surface already hard, cutting off the weeds close to the ground. Then the weeds are raked off, leaving the ground in really worse condition than before, for the weeds shaded the surface though they did rob the ground. Hoeing should be fully as much to loosen the soil as to destroy weeds. Every stroke of the hoe should loosen up an inch or more of soil, and this loose soil should not be raked down too fine, or the first

heavy rain will beat it down very hard. One would hardly believe what a help constant cultivation of this kind is to herbaceous and all other plants. And when rains come, the water is all taken up where it falls. Good mulching preserves the looseness of the soil in the same way. I am sure that very many more of our lovely native flowers could be successfully grown than there are, if mulching or hoeing could be made a feature of cultivation.

Instead of saying more about these plants, I will diverge a little and speak of ferns. I believe that all of us that possess a garden, be it ever so small, have place for a few ferns. What they require above all else is shade. It may be the eastern or northern side of a dwelling or a wall or any other situation where the afternoon sun does not reach them, and it will do. Under trees is not suitable, as a rule. The roots of trees exhaust the soil of moisture, and the branches shed big streams on the fronds, both to the injury of the plants. My own collection of native sorts are planted on the eastern side of a neighbor's house, which forms a division line. The sun shines on them until noon but not later. They flourish in the best possible way. Among the twenty-five sorts collectible about our city, some half dozen of them are evergreen, and these should certainly be planted. The time to collect ferns is toward late summer. All the kinds can be seen then, and their fronds being fully matured, the height to which they attain is shown, and the proper place for them in the garden can be determined. Take a good ball of earth with them if possible, though, as it is easy to get all their roots, they are not difficult to transplant without this.

During the trip to England already referred to, it was my privilege to visit many large private grounds, and, though the climate of that country is thought particularly favorable to the cultivation of herbaceous plants, I cannot say that I saw any evidence of more interest in them there than is displayed here. But let any one who wishes to see them in perfection visit the Royal Gardens, Kew. The department for these plants is supposed to contain everything hardy, and to have every plant correctly named. And as far as possible to every plant has been given a position it prefers. There are swamps, bogs, dry rocks and damp rocks, shady nooks and open places, all filled with flourishing plants. With notebook in hand, after two visits, I did not nearly make record of all I would have wished to have done. In the woods and fields visited, I did not find nearly as many wild plants as similar situations here, afford. No doubt it is there as it is here near large cities, those who see pretty flowers are apt to dig or pull them up, and so they disappear. On reaching these shores again, after my travels abroad, I could but feel a pride in the beautiful scene presented on each side of the track as the cars sped on from New York to Philadelphia. It was the month of August and, while full of recollection of the never-to-be-forgotten kindnesses shown to me by the good friends I had parted with in England, it seemed to me the picture before me could not be presented on any other shore. Crossing the Delaware at Trenton and entering once more Pennsylvania, my feelings can be expressed by quoting these lines from Byron :

"Yet are thy skies as blue, thy crags as wild :
Sweet are thy groves and verdant are thy fields,"

—for look wherever I would, cultivated fields, the trees of the forests, and the wild flowers of the roadside seemed to me never to have looked so beautiful.

JOSEPH MEEHAN.

Germantown, Philadelphia.

DURATION OF HERBACEOUS PLANT BORDERS. —It is a common belief that a border of hardy plants, native or otherwise, once planted is a fixture and will keep on increasing in beauty.

To a certain extent this is true when compared with summer bedding and half-hardy plants in general ; but, if half the attention and expense were devoted to the herbaceous borders that is given to the former, the results would be far more satisfactory.

To obtain the best results from the hardy border, attention should be given as to how often the different kinds require transplanting. Such kinds as hollyhocks, foxgloves, Sweet Williams and Canterbury Bells, give the best results if treated as biennials, unless planted in places peculiarly adapted for them.

Then follows the section that arrive at their best the second and third year from the time of planting. These can readily be recognized by their mode of growth,—they spread and increase by an underground stem and are

mostly fall-blooming, including all the perennial Sunflowers, Asters, Golden-rods, Heleniums, etc. These should be dug up and replanted about every third year, and, if possible, their location on the border changed, as each kind of plant exhausts the soil of food peculiar to itself.

Among the kind that may be left undisturbed for a longer period are Pæonies, Iris, *Dictamnus*, *Hemerocallis*, *Funkia*, etc. These have thick, fleshy rootstocks and will be satisfied with a top-dressing of manure dug under in the spring. E. HEMMING.

ARRANGEMENT OF COUNTRY FLOWER GARDENS.—One who loves flowers, and can gather interest from individuals, generally has serene enjoyment in their contemplation in whatsoever position they may be placed. But this interest will diminish if the same plants be frequently viewed in unfitting positions. How often do country gardens lack an arrangement of plants which will please the eye and gratify artistic taste in the whole scene such arrangement presents! House plants at the close of winter are taken out and stood in rows in a convenient place—some are planted out in certain locations simply because they are vacant places and the soil is easily dug up to receive them; annuals are sown along the side of the house, by the drying wall, because something is needed there; "slips" are put in any convenient spot; and so it is from beginning to end, the whole thought centering on the individual. What extreme pleasure is withheld in the absence of a flower *garden*, graceful borders of shrubbery, specimen trees arranged effectively, cool, shady walks and nooks. Country properties invariably offer great opportunities for all these things—opportunities which are denied comparatively to all but a few city residences.

There is very little encouragement for neatness where plants are placed around indiscriminately, and improvement along the lines suggested will double and treble the attractiveness of country homes.

A flower garden of the present day frequently is in combination with the family truck patch, an unobjectionable feature if the arrangement be good. Therefore, it may frequently mean but a slight increase of space allotted to the truck garden to make it a thing of beauty as well.

FRUITS AND VEGETABLES.

TRUFFLES.—Truffles belong to the fungus family and grow wholly beneath the surface of the ground. Dogs are trained to discover where they are, by scent. When they are located by the dog, the hunter digs them up. The London *Journal of Horticulture* says: "Truffle hunting, as a regular pursuit among the English peasantry, is not yet quite extinct—or was not a very few years ago. At Cheriton, close to the scene of the stern struggle between Roundhead and Cavalier, there recently lived an old man called Isaac Leach, who, says a correspondent of the *Daily Express*, practically subsisted by the Truffles he found and sold. His Truffle dog is still alive, I believe, and belongs to one of the villagers; it is white and curly-haired. Leach would sometimes find as much as a pound of Truffles, in the day, among the downs. Of old, Truffle hunting was quite a calling. 'Ye Truffle man' is mentioned by various old writers. Gilbert White, in his delightful 'Observations on Vegetables,' has this note: 'A Truffle hunter called on us (in August) bringing in his pocket several large Truffles found in the neighborhood. He says these roots are not to be found in deep woods, but in narrow hedgerows and the skirts of coppices. Some Truffles, he informed us, lie two feet within the earth, and some quite on the surface; the latter, he added, have little or no odor, and are not so easily discovered by the dogs as those that lie deeper. Half a crown a pound was the price which he asked for this commodity. Truffles never abound in wet winters.'"

HABIT OF THE PLUM WEVIL.—In the notice of Prof. Waugh's excellent treatise on the plum, an intimation appears that the authors are mistaken as to the method by which the Plum Wevil or curculio deposits its egg. It appears, however, that Prof. Waugh is right. The crescent mark is made by the insect with its snout, and it has then to turn, in some way that does not seem to have been described, and deposits the egg into the cavity it has made with the apex of its trunk. It would seem that nature has not been so obliging to these creatures as those to which she supplies ovipositors,—but, then, nature seems to delight in doing things in many ways.

BURDOCK.—In past issues of MEEHANS' MONTHLY, reference has been made to the extensive use of our common burdock, *Lappa major*, as a vegetable, among Oriental nations. In "Garden and Forest," for 1897, is a very interesting account of its use by the Orientals, by a Japanese correspondent, Inazo Nitobe, which is well worthy of reproduction here:—

"Sowerby writes in his 'Useful Plants of Great Britain:' 'The stalks of the burdock, cut before the flowers open and stripped of their rind, form a delicate vegetable when boiled, similar in flavor to asparagus. In the raw state they may be eaten with oil and vinegar as salad. They were sometimes candied with sugar in the time of Bryant, as those of angelica are.'

"In Japan, burdock grows wild in several places, but it is also extensively cultivated as a vegetable. Every one knows and eats 'Gobo,' the usual appellation for this plant, although a more refined and almost obsolete name is 'Kitakisu;' sometimes it is called 'Uma (horse) fuki (Nardosmia).' It is familiar to the Ainu under the name of 'Seta (dog)-korokoni (Nardosmia).' Both the Ainu and the Japanese prefixes, 'seta' and 'uma,' when applied to plants, seem to have much the same sense as the English 'dog,' in dogwood, dogbane, etc., and the 'horse' in horse-radish, horse-chestnut, horse-mint, etc. The Ainu use it as food as well as medicine. They boil the tender shoots with beans, and the roots are put into soup. For medicinal uses, the young leaves are softened, by rolling them between the palms, and applied to skin eruptions. The Japanese esteem *Lappa* for similar purposes. It is used in many preparations for its medicinal properties, which, they believe—at least, the old-fashioned empirics believe—consist in counteracting the action of some kinds of poisons. Grated and made into pulp, the roots are applied as a poultice in eruptions of the skin. But, by far, the more important use is made in the kitchen. As regards this plant, we have out-stripped the pantophagous Chinese, for they have not raised the plant to the dignity of a market vegetable. 'When young,' says a Chinese book on botany, 'the tender leaves of the *Lappa* are cut and eaten as greens; the roots may be boiled or steamed and eaten, but people nowadays rarely use the plant.' Among the Japanese, however, it has been under cultivation for years, and possibly for centuries. It enters the kitchen of every household, not being ostracized from the menu of the most high-toned restaurant. Thousands of acres are devoted to its culture. Official statistics, for 1888, give the total production of *Lappa*, in the country, at about 72,000,000 pounds, valued at 422,134 yen. The roots average 350 grains in weight.

"The production of so large a quantity is not at all to be wondered at, when we recollect that *Lappa* ranks high in the scale of nutritive plants. In the amount of nitrogen it stands higher than potatoes, beets, carrots, or turnips; in fact, few roots or tubers approach it."

THE COLUMBIAN RASPBERRY IN THE STATE OF WASHINGTON.—The Columbian Raspberry is the best of all the varieties we have tried; it is hardier than the Gregg. It does not sucker; every one who has seen it in our garden speaks highly in praise of it.

I notice that some catalogues call it *red*—ours are purple. When cooked, they have a good flavor and make fine jam, of rich, purple-crimson color.

How are we to know that a variety of fruit or flowers comes true to name? From the report of some persons I am inclined to think their Columbian Berry is not the same variety we have.

Ours was procured from James Vick's Sons, and I presume there is no question but that it is true to name. SUSAN TUCKER.

Cheney, Wash.

POISON ON CABBAGES.—"A man would have to eat 100 cabbages at a sitting," says Dr. Henry M. Skinner, "to be poisoned"—referring to cabbages treated with Paris Green to destroy the cabbage-worm. Nothing is better for this purpose, and no one need fear that he will be poisoned as well as the worms. But this is not because Paris Green is not a deadly poison. It is arseniate of copper, a combination of arsenic and copper, but, in the diluted manner in which it is used, there is not enough left to be harmful to human beings. In the cabbage, especially, it is employed before the cabbage heads, and, the loose leaves being always pulled off in preparing for cooking, there is little chance of any at all being on the cabbage, when ready for the table.

THE SCUPPERNONG GRAPE.—But few, other than those who have had considerable experience in the South, have any idea of the enormous productiveness of the Scuppernong Grape. There are few berries on a bunch, but this deficiency is made up by the great number produced.

The annexed illustration, made from a photograph kindly furnished by Mr. C. E. Pleas, of Chipley, Florida, gives an excellent idea of its productive condition. It does not thrive north of the Potomac.

BLACK SCUPPERNONG GRAPE.

CALIFORNIAN ASPARAGUS.—One may well pause at a loss to decide which most to admire, the generous climate of California or the splendid enterprise of its able band of fruit and vegetable growers. By the end of March and early in April, Californian asparagus was in quantity to be hawked about the streets of Philadelphia by the traveling dealers, and at a price within the reach of a moderate income. In quality, it is far superior to French canned asparagus, or that offered in the home-grown market. Blanched asparagus has seldom more than the tops eatable, the greater part being too stringy for mastication. The whole six inches of length is eatable. It is a favorite eastern saying that some things can be done as well as others,—but it does not apply so far to eastern asparagus growers.

PIE CHERRIES.—What are popularly known as pie cherries, or perhaps, to the trade, sour cherries, are among the most valuable of fruits to the suburban garden. The sweet cherry is usually devoured by the birds—the robin, among its many virtues, having especially this great sin to answer for. But not even the ruthless English Sparrow cares to take the pie cherry for dessert. When this cherry is grafted on the Mazzard, instead of the Mahaleb, it makes a beautiful small tree, both in flower and fruit. Mr. G. Harold Powell, of the Delaware College Agriculture Experiment Station, has recently prepared a monograph and history of all varieties known in America. It is an especially valuable work. He regards as the three best varieties for Eastern States, Early Richmond, Morello and Montmorency.

BIOGRAPHY AND LITERATURE.

THE PEAR AND THE PEACH.

Ambition is the ripened pear,
And friendship is the vine,
Which even round a ruin will
Its clinging tendrils twine.

But love is like the luscious peach,—
A touch its bloom destroys ;
As beautiful its blushing cheek,
As sweet its tasted joys.

Forever in its inmost heart
A hidden poison lies,
And all its sweetness is forgot
If jealousy arise.

So then, beware,—go not too far,
If only sweets you'd find,
Just brush the bloom and taste the fruit,
But leave its heart behind.

For man too often at its core
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While many a woman breaks her teeth
Against its heart of stone.

MARY BAYARD CLARKE.

DR. CHARLES MOHR.—Dr. Charles Mohr, one of the noted botanists of America, and for many years a druggist at Mobile, Alabama, died on July 17th, at Asheville, North Carolina. For a number of years past, he had been in the service of the Scientific Department of the United States, and a monumental work on the "Flora of Alabama" appears among the Agricultural contributions, simultaneously with the announcement of his death.

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YEW TREES IN ENGLAND.—It is said in an English daily paper, that "Yew trees are known to have been planted in early times to mark the site of a pagan temple. Our pagan forefathers built their church, and in close proximity to the church, they planted one or more Yew trees. At Selborne, in Hants—the village where Gilbert White, the famous naturalist, lived—there stands a Yew, judged by experts to be the oldest in the country. Once it stood at the entrance of a pagan shrine, and now that a Christian church stands on the spot, the aged tree still overhangs the south porch. Four feet from the ground its girth is twenty-four feet. Its age is computed at 1,200 years, at the least. This summer its foliage has been as green and fresh as ever. It is most interesting to learn that trees were generally planted on the south side of early Christian churches, with the object of affording shelter in rain or shade in sunshine to churchgoers, who, in those days of wide parishes, came from long distances, and often arrived before the time for service. Trees are also known to have been planted around churches on high elevations, as being likely to protect the fabric from storms. The Yew tree was the species decided upon, partly because of its sombre appearance, and partly because it was recognized as an emblem of mortality. The tree in Selborne churchyard has looked down on many thousands of funerals, for the enclosure at the south is one mass of mortality ; the earth is but a 'crust of men's bones.' Trees were considered so useful in churchyards in bygone times that an Order in Council was issued, in the time of Edward I., forbidding their removal. *Ne rector arbores in cemeterio prosternat*, says the Order. It is also interesting to learn that, at the present time, almost every ancient Yew in the land is being watched and guarded by jealous eyes and hands. Any attempt to disfigure or remove one of these living 'links with the past' would at once be met with a strong and wide-spread veto. Hard by the Selborne Yew is a square enclosure

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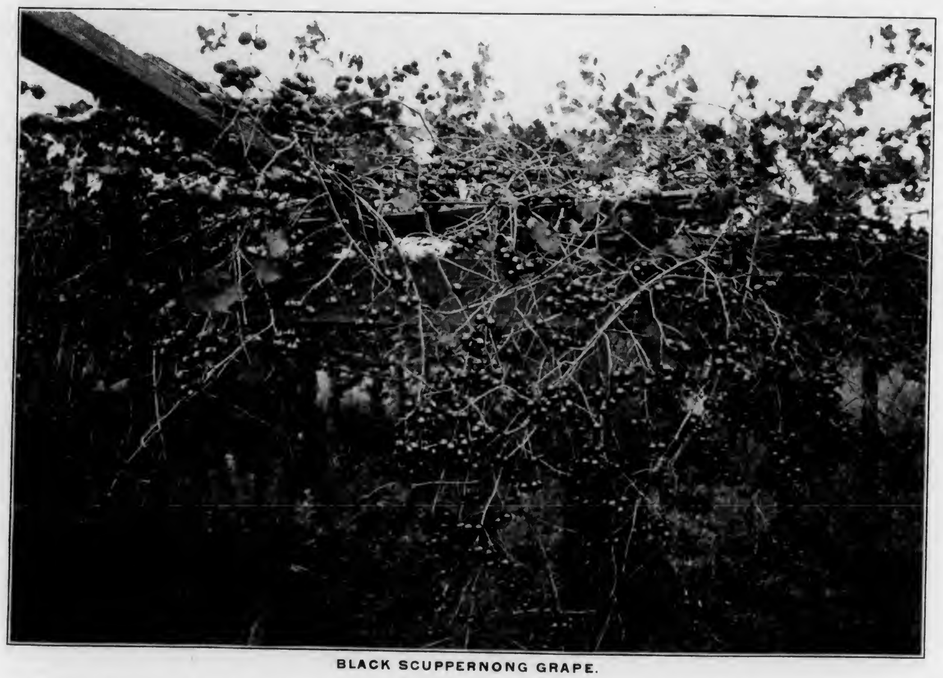

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INTENTIONAL SECOND EXPOSURE

known as the 'Locus ludorum,' or 'place of play,' a playground for the village children which has existed from Saxon times. On this spot a tree was recently planted to celebrate the Queen's Jubilee, but the young sapling, as though it were ashamed of beginning the race of life with so old a kinsman close by, has taken fright and died."

The ancient Britons used the Yew for their bows, if not the arrows,—and it has been stated that this was the origin of the great respect they had for the tree.

GENERAL NOTES.

FILTRATION OF DRINKING WATER.—It is a curious reflection on the slow pace at which advanced knowledge proceeds among the mass of the people, to note public bodies spending vast sums of money on schemes that more intelligent quarters have tried in the balance and found wanting. Just now, Philadelphia has started on a huge filtration scheme that may cost twenty millions of dollars, just as others are beginning to find out that with all its attendant evils, nature-prepared water is, on the whole, the best thing. The London "Hospital" tells us that the Medical Inspector of the British army says, of filters: "Much of the knowledge that has been gained in recent years about filtration has tended to throw doubt upon the power of ordinary filters to produce a safe and drinkable water. Indeed, a sort of despair has seized upon scientific men upon this subject."

SANITARY SCIENCE.—With the modern philosopher, everything under the sun is to be taught in the public schools, and "Sanitary Science" is the latest idea of that kind. Just what the science is may well be a question. One of our Californian exchanges is having some fun at the expense of the so-called science. We are told that the seeds and skins of fruits are injurious, and strawberry seeds are to be carefully taken off before the succulent part is eaten. By the time we get the skins and seeds from huckleberries, grapes, currants, gooseberries, and so forth, there will be little left to eat. If we can only get this science into the birds, so that they will leave our cherries alone, it might do good service,—but then, without the cherry skin and the cherry stone, the fruit would not amount to much. The Graham, or brown bread eaters will receive a heavy blow from this "Science," and we shall all have to fall back on plain dough, if we would have healthful lives. People were coming to the belief that the wheat skins and other small skins and seeds, though in themselves indigestible, kept the food open for the ready operation of the digestive fluid, and rendered yeoman service. But what will "Sanitary Science" say next!

TOBACCO IN CALIFORNIA.—The remarkable enterprise of the Californians deserves the success that has made their State so famous. They first study all the elements necessary for any enterprise, and then, with full faith in the result, go ahead in courageous style. No one has ever thought that tobacco-culture would ever be among California ventures, yet recently, a company was formed at San Diego, with a capital of $50,000, to try the experiment on one hundred and eighty acres. But they already feel it is more than an experiment. They feel sure of success.

GRAMMAR IN HORTICULTURAL WRITING.—An educational journal uses a horticultural illustration to show the proper application of the word "which." "The birds which eat fruit," should be "birds *that* eat fruit." This is clear enough. It tries to make the matter clearer by filling out the full meaning of the sentence. "The birds, which you speak of that eat fruit, repay us by destroying insects, which are often injurious to plants." To our mind, the intelligent horticulturist would replace all the "whiches" here.

TULIP TREE SCALE.—The scale insect that loves to give its attention to the tulip tree is among the largest of these insect pests, and is of a bright cinnamon brown. It has been said that even the learned in large cities know so little of nature that they hardly know whether a tomato grows on a tree or an apple grows on strawberry vines. If there be people so ignorant, they might believe that cinnamon buns are furnished by the Tulip Tree, and that these scale insects are a young crop of buns. As in the case of all this class of insects, they are readily destroyed by kerosene emulsion.

HAMAMELIS VIRGINIANA.

WITCH-HAZEL.

NATURAL ORDER, HAMAMELIACEÆ.

HAMAMELIS VIRGINIANA, Linnæus.—Leaves obovate or oval, sinuate-dentate, sub-cordate at the base, stellately pubescent. Stem six to eight or twelve feet high, with straggling, flexuose or geniculate branches. Leaves four to six inches long; petioles about half an inch in length. Flowers greenish-yellow, clustered in threes on a common peduncle nearly half an inch long; petals narrow, linear, a little crisped, about three-quarters of an inch in length. Seeds black and shining. Darlington's *Flora Cestrica*, as *Hamamelis Virginica*. See, also, Gray's *Manual of the Botany of the Northern United States;* Chapman's *Flora of the Southern United States*, as *Hamamelis Virginica* erroneously, and Wood's *Class-book of Botany* and Britton and Brown's *Illustrated Flora of the Northern States and Canada*, correctly as *Hamamelis Virginiana*.

In the Witch-hazel, we have one of the most interesting of the wild flowers of the United States. In a flower garden, a solitary rose may often be found in full bloom when the frost comes, and much tender sentiment has been evoked on the idea of its blooming alone when all its lovely companions were faded and gone. But, though the same sympathetic feeling may not arise as regards a single flower of the Witch-hazel, it may be entertained of the species as a whole, the flowers appearing only when those of other plants have left us, and, indeed, often struggling along in growth after the Ice King has been proclaimed sovereign of Winter's throne. Practically, however, the flowers make but a short stay with us.

"Brief as the lightning in the collied night,
That in a spleen unfolds both heaven and earth,
And ere a man has time to say behold!
The jaws of darkness do devour it up."

Like many of the shorter lessons of life, it teaches us many things that the longer stories fail to tell. One, the most frequently dwelt on, is the curious fact of the flowers opening in one year and the seeds not maturing before the flowers of the succeeding year appear. But this fact is not unique in the floral world. The violet, in our northern States, often opens a few flowers in the autumn, the fruit only to mature late the following spring,—and the author has placed on record that the red, shining fruits of many of the species of *Mammillaria*, and probably many other members of the Cactus family, ripen fruit, at flowering time, from the flowers of the previous year. Aside from this, is the fact that the capsule is full-grown, and the seeds mature long before the capsule expands in the fall of the year. Then, the expansion of the capsule itself is of interest, by reason of its sudden opening and the projection of the seed to a great distance. This point has attracted observers from the earliest times. Elliott, in his "Sketch of the Botany of South Carolina," issued in the earlier part of the past century, observes that the seeds are "discharged with a spring to some distance." In reference to the distance the seeds can be thrown, Miss M. B. French notes, in the 7th volume of the "Botanical Gazette" (1882), that a branch, lying on the table, sent the nutlets 12 feet to the ceiling! The process by which the seeds are projected was first explained, by the author of this chapter, in a verbal address, before the Academy of Natural Sciences of Philadelphia, in 1872. It was shown to come from a contraction of the horny endocarp, or inner coat of the capsule. In preparing an abstract for publication, by what is generally known as a "slip of the pen," "albumen" was written for "endocarp." What would have been regarded as an obvious error in the eyes of the general reader, was taken as a mark of gross ignorance by Professor Asa Gray, and the reference in the bibliography of *Hamamelis* to "American Journal of Science, Series 3, V., 144," is merely a caustic criticism of the author's egregious error! The most careful writers make missteps at times. In the case of this very plant, as noted in the description,

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this great and generally closely accurate botanist quotes Linnæus for the specific name *Virginica* instead of *Virginiana* as Linnæus wrote it.

Another interesting point, in connection with the plant, is the term Witch-hazel and the origin of the name. Among the best of the popular accounts of this, and other matters connected with our plant, that by Dr. W. P. C. Barton, in his "Flora of America," may be quoted entire: "The opened nut remains, for the most part, on the branches, long after the succeeding period of florescence, becoming, after the seeds have dropped, a bistre-brown color. Hence, the flowers and fruit are found on the shrub at the same time, which has given origin to the generic appellation *Hamamelis*, being an ancient Greek name from *hama*, accompanying, and *melis*, an apple tree, because the plant which bore it blossoms at the same time. This is supposed, by modern botanists, to have been the *Mespilus Amelanchier* (Medlar), or something near it. Linnæus, finding the name unoccupied, fixed upon it for a new American shrub, which Mitchell had called, in his letter, *Trilopus*. The reason of its appellation, in the present instance, seems to be that, as the fruit is a whole year in ripening, it accompanies the flowers in autumn, which are destined to produce the next year's fruit." He then remarks on its supposed use in water-divination and says, "A forked branch is used and twirled between the fingers and thumbs of both hands, during the muttering of some mystical words, when, in the spot towards which the point of the bifurcation drops or points, water is said by them to exist. Hence the name Witch-hazel."

In regard to the points referred to in this abstract, Prof. C. S. Sargent has shown, in his monumental work, "Silva of North America," wherein references seem to have been all re-examined, that the Linnæan name, *Hamamelis*, dates for a few years anterior to *Trilopus*,—and, as regards the use of the plant in divination, the author has met with nothing, in the earlier American general history, to show that this plant was specially used in these cases. The Wych-hazel of the Old World is an elm,—used in the olden time for making "wyches," or chests. For water-finding, the branches of any kind of fruit tree were employed, those of the plum, and especially the blackthorn, being used for hedging and ready to hand, coming into the more frequent use. The leaves and general appearance of the branches are suggestive of the Wych-hazel of Scotland, and, corrupted to Witch-hazel, is possibly the origin of our name. In modern times, there have been accounts, in serials, concerning it. One, by Mr. Alfred Burnson, in the "Patent Office Report" of the United States Government, for 1851, indicates a firm belief in the efficacy of the twig method of water-search.

An interesting feature of the plant frequently met with is that, in many instances, the seed vessel, instead of the usual two-horned character, is transformed into a bladdery vessel with numerous horns over its surface. Cut transversely, in early autumn, it will be found protecting numerous full-grown, winged and wingless aphides. The female deposits an egg in the spring, and with it a fluid that results in the gall, as described. Closely examined in connection with other characters in the normal flowers, these horned processes are seen to have primordially been scales or bracts,—and the morphologist learns that, under some of the conditions of nature, this fruit may have been a catkin, thus confirming the views, of some botanists, that the plant is closely related to the natural order *Amentaceæ*, of which the true Hazel-nut is a member. The resemblance of the plant to the hazel struck the earlier botanists. David Banister, the first to make the plant known in the Old World, sent it under the name of "*Pistachia Virginiana nigra Coryli foliis*"—*Corylus* being the hazel's botanical name.

Our plant is again interesting from the fact that it is another illustration of the co-relation between the plants of Eastern North America and those of Japan. Though admittedly closely related, *Hamamelis Japonica* is recorded as scarcely worthy of distinction. Since our own localities have been closely scrutinized, as much or more variation is found among the plants of our own country as in this race in Japan, and its specific identity is now conceded.

EXPLANATION OF THE PLATE.—1. Branch, from Eastern Pennsylvania, taken in October, showing the opening of the fruit. 2. Branches of the same taken just before frost. 3. Back view of a flower, slightly magnified, showing the symmetrical arrangement of the scales. 4. Front view of the same flower. 5. Fertile and sterile stamens; petal and sepal enlarged.

WILD FLOWERS AND NATURE.

APRIL AND OCTOBER.

And if one sits on some pensive bole
With curtained eyes, when every wind is still,
The falling leaves in grave October's bowers
Sound just like April's gaily pattering showers.

NECTAR OF FLOWERS ACCORDING TO THE SOIL.—The production of honey from flowers varies according to the longitude and latitude of the place where the plants grow. But these two influences are not the only causes acting upon them. M. Gaston Bonnier, in his report, states the tendency of the kinds of soil for melliferous plants, advising the study of them in different compositions, and measuring the quantity of honey produced by them. He thus estimates that different soils have a very different effect in the production of honey. White Mustard (*Sinapis alba*) gives more nectar on clay ground. Sarrasin (*Polygonum Fagopyrum*), on the contrary, gives more from silicious clay than from lime ground. Phacelia (*Phacelia tanacetifolia*) prefers a clay, or clay and sand soil. Pastel (*Isatis tinctoria*) yields more from lime than does Luzerne (*Medicago sativa*). Sainfoin (*Onobrychis sativa*) gives very little results from divers soils; it gives, however, least from lime soil. These variations explain, in part, the divergences in opinion of apiculturists on the honey value of such and such a species. Luzerne, Phacelia, and even the Bruyeres (Heaths?), for example, may be very sweet or not, according to the nature of the ground in which they grow. For those who wish to raise analogical research, there are given the three following ways by M. G. Bonnier:—The first method, for comparing the nectar value or richness of the same species placed under different conditions, is to cover the plants with pieces of muslin so that no insects can get in, and by the means of a little pipe measure the quantity of honey in the flowers of the same age. Second, by covering the plants in the same way, and taking a certain number of flowers of the same age, leaving them for a while in a quantity of water, as determined, and measuring the amount of glucose obtained after the immersion. The third way is to leave the plants uncovered, count the number of bees visiting the flowers, but not counting the flowers having inflorescence, yet not in the same state of development.—From *La Semaine Horticole*.

[We translate the above, believing it will interest bee-lovers, bee-keepers, as well as those who love to study the various phases of plant-life,—though believing that Mons. Gaston Bonnier, usually regarded a botanist of a good judicial mind, has gone wrong in this instance. It is well known that the odors of flowers are in the main derived from the nectar secretions,—and the odors of flowers vary with the different periods of the day. Before deciding on the chemical agencies involved, M. Bonnier should have ascertained at what period of the day the observations were taken,—and what period of the day afforded the richest harvest.]

VARIETIES IN MAPLES.—Miss Putnam, of Harmonsburg, Pa., sends a specimen of the common Red Maple, *Acer rubrum*, in which the seeds are grouped in dense clusters, like bunches of grapes. Among plants there is as much variety in the individual of a species as among the individuals among the human kind,—and the noting of these individual peculiarities is becoming one of the most interesting of studies with lovers of plants.

FUNGUS GROWTH AROUND BRANCHES.—In recent numbers of the MONTHLY, I have seen cuts of a fungus growing on oak trees, and mention of the injury such plants cause to trees. I find such fungi growing on the stump of an oak at Mr. Wm. B. Reed's, Oak Grove, Chambersburg, Pa. Last October, I was surprised to see that one fungus had encountered a small geranium,—also a stick and, even, blades of grass. In each case, it had not pushed them aside, but had grown up to them and then surrounded them, so that they ap-

peared to be growing through the fungus. I made a photograph of one, October 21, 1890, and enclose you a print, thinking it might amuse you. I have found potatoes perforated by underground stems of *Triticum repens;* and, since I have seen the fungus I have spoken about, I wonder whether the stem grew through the potato or whether the potato behaved like the fungus and just grew past and around the stem.

Chambersburg, Pa. JOHN LAURENCE.

[It is said of one of the English kings—George III., we believe—that, when his intellect began to fail, he frequently expressed surprise as to how the apple got inside the crust of the apple dumpling; and, also, it is reported that the young philosopher could not understand how the wind was stored in the bellows. Many of the works of nature, simple when understood, seem mysteries in their early stages. Growth-energy is extremely accommodating when not interfered with. It will even deposit wood around a label or piece of wire attached to a tree, just as this fungus has done,—but it displays a tremendous force when its advance is opposed. If a stolon of a Couch-grass strike the smooth skin of a potato, it will run around the tuber; but, if the stolon's point be caught in one of the potato's eyes, or in some other indented spot, there is no such thing as turn about in its nature, but it goes straight through with as much ease as a pin or needle would pierce resisting flesh.]

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FLOWERS IN FRIENDSHIP'S BOND.—A correspondent sends a personal letter, from Mrs. Susan Tucker, of Cheney, State of Washington, so full of happy sentiments as to deserve publication; feeling sure that Mrs. T. will not object to its appearance here:—

"I came to Washington when this part of the State was a wilderness; my nearest neighbor was several miles away. I had only birds and beasts for my companions, and was often alone—quite alone—for days at a time. It was then that I learned to love the dear wild flowers, and, when I took up the study of botany, the information gained by observation, in those lonely days, was valuable to me. What you said about your friend's house and furniture, in a recent issue of MEEHANS' MONTHLY, reminded me of the make-shift for furniture which we had in our cabin home. Indeed, we have more home-made furniture now than of other kind. My two nearest neighbors are Germans. The five German families in this vicinity are from different parts of Germany. The family I am best acquainted with is from a place the name of which slips from my mind when I try to write it; but it is somewhere in Alsace, near Strasbourg. That is, the man is from there; his wife is an Austrian. I notice that these German neighbors of mine are all fond of flowers, and the little ones love me because I love flowers, too. It forms a bond of union,—a tie of friendship where otherwise we might be strangers.

"Once, I called on a German neighbor just from the Fatherland. I knew less than a dozen words of her language, and she knew scarcely more of mine; but she had just come in from a walk on the prairie and held a handful of our pretty wild flowers. Afterward, I was surprised to think how much we could say with a few words and a handful of flowers.

"She had known some of these flowers, or other species of them, in her far-away home, and it seemed like meeting friends to find them in this strange place."

THE WITCH-HAZEL IN THERAPEUTICS.—In medical botany, Witch-hazel has a wide renown. Strange to say, for all the extended use of extracts and preparations in general, there are eminent medical men who regard it as of no real efficacy. Its use in medicine was introduced through its extensive employment by the Indians. They used the bark in decoction for tumors, inflammatory swellings, and hemorrhages. This would indicate the presence of considerable tannin in the bark, as this is the main acting principle in remedies for these troubles. The Indians of the South ate the seeds, and made pretty ornaments from them. In the same natural order, there is apparently nothing of medicinal value unless it be the *Liquidambar*, or Sweet Gum, a species of which is so much admired in ornamental gardening. This is said to exude a balsamic resin.

IXIA CHINENSIS, L., PARDANTHUS CHINENSIS, —BLACKBERRY LILY.—Here is a stranger from the flowery kingdom as much at home in our wild woods as if it had never traveled a mile from its "own countrie." Seeing it out of bloom—a large clump of it—I remarked pleasantly to myself (I was alone at the time), "There is an Iris, which I will take along and plant in my wild-flower garden." That was last summer. I am collecting the wild plants of Iris so that when they bloom I can find their names. Passing by my wild-flower garden, a few days ago, I was surprised to see buds, and a long, leafy stem; and yesterday the plant was in bloom. Quite a pleasant little freckled face was turned up to me, and I stood a while admiring its strangeness. I saw directly that it was not an Iris. Consulting Dr. Gray's Manual, I found it was the Blackberry Lily, a plant of which I had often heard, but was never fortunate to see. Dr. Gray says that it has sparingly escaped from gardens in the East. It amazes me that I should have had the luck to find it growing on the southern slope of a high hill, with woods around it and rocks above it, evidently having escaped from a near-by garden, as there is an old homestead some hundred yards above and crowning the hill. It belongs to the Iris family and can be easily mistaken for it when out of bloom. Anyhow, it is an appreciated plant for my garden, as it blooms for a long time, each blossom lasting a day, and then, curling up its sepals and petals, it goes to sleep.

Festus, Jeff. Co., Mo. F. K. STEELE.

[The Linnæan name of *Ixia Chinensis* has long been dropped, and it has become generally known as *Pardanthus Chinensis*. But the usually conservative *Index Kewensis* has carried it back to an older name, and gives it as *Belamcanda punctata*. The name *Pardanthus* has been so universally in use in horticultural publications that it cannot be changed without confusion. However, it is so well known as Blackberry Lily, among flower lovers, that the strictly correct botanical name is not of serious importance to them.

Though it is rather common in gardens, we agree with our correspondent that it is a delightful plant to grow.]

THE "WANDERING JEW" OF THE VEGETABLE WORLD.—The years 1856 and 1857 were marked by a terrible plague which attacked the potato, and reduced our laboring classes to misery. About this time, some one ingeniously discovered a species of vegetable, the roots of which could be used in the place of the potato. It was then that tests were made of the Topinambour. A journal of that time called attention to another plant considered as a successor to the potato, a most singular plant, *Lathyrus tuberosus*, L., with a black root, called, by some, the *Souris de terre*, (Ground mouse), because of its shape, and *Châtaigne de terre*, (Ground chestnut), on account of its taste.

This plant inhabits eastern Asia, the north of Africa and Europe, and France; it is also met with in Lorraine and Bourgogne; in the latter countries, at that period, and perhaps to-day as well, they are the delight of children, who follow, in the wake of the plow, to gather it. The village market at Laingres was regularly and abundantly supplied with it.

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INTENTIONAL SECOND EXPOSURE

Cultivation of this root was hindered through popular prejudice, amongst the gentry, that it traveled under the soil, and would leave the spot where it was found and pass into the neighbor's field. The fact is, it propagates itself in chaplets or beads, and these tubercles are spaced the length of a straight running root, of which the two extremities are rarely found; in order to arrest anterior tubercles, propagation is made in advance, that is why it is said of this plant that, by continuing its march under the soil, it would finish by making the tour of the globe in a given time. It is an itinerant and cosmopolitan plant; it knows no frontier nor country, and leads a nomadic existence; it is, in fact, the "Wandering Jew of the vegetable kingdom."

—*La Semaine Horticole.*

THE EDELWEISS.

THE EDELWEISS.—The Edelweiss, pronounced "edelvice," is one of the most famous of the plants of continental Europe. In the high, barren rocks, crowning alpine heights, it is often the only plant to be found under such unpromising conditions; and, though the mountain climber may not be a botanist, there is the same hunt for it, as among young people here, for a four-leaved clover. So great has been the impulse to tear it out to show that the mountain has been climbed, that, in some districts, it has been almost wholly carried away. It is not at home in warm countries. Though frequently raised from spring-sown seeds in the MEEHAN NURSERIES, they succumb to the midsummer sun. Its botanical name is *Leontopodium alpinum*, or Alpine Lion's-foot. We are indebted to the *Gardening Illustrated* for the pretty picture hereunto annexed.

LONGEVITY OF TREES.—It is a noteworthy fact that almost all examples of very old trees are either pollards or resemble pollards in their stem and growth. We know of no instance of a long, clean-boled tree reaching an age anything like that of these patriarchs of the tree kingdom, although, perhaps, the very fact of their high commercial value may reduce their chance of escaping the axe when economy or expediency are called upon to decide their fate. Other reasons may be found, however, which account for the comparatively short lives of tall timber trees. In the first place, they are much more exposed to the full force of the wind than trees of short stature, and any weakening of the root system results in their overthrow after a few years. Another reason may be found in the tendency tall trees exhibit of becoming stag-headed as they advance in years. Tall oaks are especially subject to this weakness, usually attributed to a deleterious subsoil, but more probably connected with a reduced supply of sap to the crowns as the heartwood of the tree approaches the bark. For the same reason, the root system gradually becomes weaker as the supply of elaborated sap from the crown becomes lower, for it is obvious that a tall, clean stem appropriates a much larger share of this material than a short or well-branched bole, with a smaller superficial area. Tall trees, again, have usually been grown in close order, or under conditions which are less favorable to the growth and development of the individual, than to the production of commercial timber; and trees, like animals, suffer in after life for the privations or misfortunes of their youth.

Probably many other causes operate in this matter of longevity, but the above are, we think, the chief ones in accounting for the comparatively greater age of short-stemmed trees compared with their taller brethren.—A. C. FORBES, in London *Gardeners' Chronicle*.

GENERAL GARDENING.

THE TRACK OF THE WARRIOR.

Where they pass they leave behind
Whole lands made waste,—where grew the nourishing grain
Nought to be seen but desolation,—where
The ploughman traced the fertile furrow, nought
But weeds and brambles,—where the hamlet stood,
A silent and yet eloquent heap of stones.

HOWARD WORCESTER GILBERT.

MOTH TRAPS.—Common observation teaches that many night-flying insects dash into flame and are killed. It is not unreasonable to infer from this that night-flying insects may be caught by a lamp so constructed that the flame can be protected from wind, while easy of access to the insect enemy. A paper before us opposes the traps and prefers spraying with insecticides, giving as the chief reason that, in moth traps, insects that are predaceous on others are killed as well as those we oppose. Friend and foe are served alike. But this must be as true of spraying. The Ichneumon fly may destroy half the brood of codling moths, but if there be enough left to serve us with nothing but wormy apples, we are better without them if spraying will do it all. A list of insects during some experiments shows that few diurnal insects were caught, and this one might suppose would be the case. Only those attracted by flame are likely to be trapped.

The discussion now going on is one to be settled mainly by experiment. Aside from experiment, there seems no reason why some injurious night-flying insects may not be caught by properly constructed traps. But the continuous attention required, as against one or two good sprayings, would seem to weigh heavily in favor of the latter as a general plan for the destruction of injurious insects.

POTATO IVORY.—Not many years since the threatened ivory famine produced that remarkable imitation known as celluloid, which has been successfully employed for every possible use, from billiard balls to piano keys. To-day the imitation has been itself imitated, and that, too, by a curious preparation of potato pulp! The inventor is a Dutchman named Knipers. He treats the waste pulp, itself a residue from the manufacture of the artificial potato flour, with a solution of acid and glycerine. The resulting compound takes the form of a species of stickfast, which is dried and ground to powder. This powder is moulded into blocks with the aid of water, very much as one uses plaster of Paris. There is, however, this important difference. The new compound can be cut, and turned, and bored, and used for every purpose, from buttons upwards, in which it was formerly customary to use bone and ivory.—*London Journal of Horticulture.*

PAINTING TREE WOUNDS.—Mr. Lyman's notes on the painting of tree wounds, and your remarks thereon, in the August number of the MONTHLY, are very interesting. It is a subject of much importance to every one, and one but little understood, evidently, for, wherever there is a group of a half dozen trees, one going to decay can usually be found, its decay traceable to the loss of a limb.

Does not the possessing or not of a sound or an unsound trunk depend altogether on the admittance or not of outside air to it? As Mr. Lyman says, there is moisture all the time in a living tree. This moisture is present for a hundred years in many old trees, but no decay starts unless air penetrates to the heart through some cut-off or broken limb.

Painting is to keep out both air and moisture, and the sooner paint is applied to a wound the better.

Though there be natural moisture in the tree, as Mr. Lyman suggests, it will never start rot of the trunk, or dead wood of the centre, so long as this centre is surrounded by living wood, excluding air from it. J. M.

THE BEGGAR WEED.—"I suppose salt will kill weeds, but will it not kill desirable plants as well? Did not Ulysses go to sowing his fields with salt to prove that he was mad, so as to escape going to the seige of Troy—though he did not accomplish his purpose and was the greatest of the Greek commanders?"

E. E. ORCUTT.

[It is pleasant reading about killing weeds by all sorts of contrivances except hard work. But it is the sweat of the brow that finally succeeds. Running the cultivator in a field, or a hand hoe in the garden, some two, three or at most four times a year over the ground, so as to prevent the weeds from forming perfect leaves, is the only royal road to perfect success.]

BEST TIME TO PRUNE.—Yes, yes, gentlemen, "*The tree would dry though the wound should be solidly sealed*," but the knot, supplied by its own direct veins or pores, would not be dried but would have its moisture tightly stopped within it. Let whatever exuding power it possesses operate with the sun and air till the knot is as dry as may be, and then seal it water-tight. I think you will not dissent from this view, upon careful reflection. Am glad that you hold to the fact that the leaves use up the moisture. Some years ago, I corrected Prof. Sargent's "Garden and Forest" on this point, when it urged the importance of having many leaves on trees when transplanted.

Exeter, N. H. J. D. LYMAN.

SPRAYING IN NEW YORK.—In regard to the corrections made by F. K. Steele, I would say that there is a law against spraying fruit trees in blossoming time, in our State (New York). The rule is to spray once just before and again as soon as petals fall, and later, if necessary. But the first sprayings are to destroy the eggs, etc., of Codling Moths. Many, through carelessness, ignorance, or the desire to get rid of those "little pests," the bees, spray when trees are in full bloom. I have been told so by fruit growers themselves, and have read the discussions, *pro* and *con*, in our horticultural and gardening papers. "'Tis true, the pity is, 'tis true."

We know trees grow big in Missouri, but I quote from Gray, "*Cornus florida*. Tree, from 12 to 30 feet high;" those we saw were from 35 to 40. Again, from Gray, "*Rhus typhina* (Staghorn Sumach), Shrub or tree, 10 to 30 feet high." In our Genessee valley, they are often seen quite large trees, from six to eight inches in diameter.

Rochester, N. Y. S. B. BOWERMAN.

SCARLET-BERRIED SAMBUCUS.—Apropos of the remarks in the September MEEHANS' MONTHLY, a correspondent writes: "Your mention of the adaptability of *Sambucus Canadensis* to cultivate for its lovely flowers, like old lace, suggests to me the introduction of *S. pubens* for its superb scarlet berries. These, in the foot-hills of White Mountains and Berkshire, are a striking feature, vying with Mountain Ash in the landscape."

PRESERVATION OF THE CALIFORNIA MAMMOTH TREES.—The public prints are full of expressions of regret at the prospective disappearance of the wonderful mammoth trees, *Sequoia gigantea*. One by one they are being cut for their lumber, are blown over by storms, or come to an end by other accidents in various ways. Nothing can prevent these losses, and even with the best protection they could not be expected to last forever. In a few generations they may reasonably be expected to disappear.

The wise course would be for State, Governmental, or even public institutions of any permanent character, with large tracts of land, to plant new groves. Even the present generation would be interested in their growth, though they would not live to see their grand proportions.

A careful study of the conditions, by the writer of this paragraph, indicated that the locations where the trees are now growing were originally more or less swampy, and that the denudations of hundreds of years in the past has simply left them high and dry. A specimen, planted in a swamp, near Clark's ranch, a few years before, had made an amazing growth; and a plant, brought by the writer, from California, set in a swamp on his grounds, has shown itself perfectly at home. But swamp planting requires intelligence. Swamp trees will not grow planted in swamps. They must be permitted to grow into the swamp of their own powers. A cart-load or ridge of earth should be laid along the morass, and the trees planted on the elevated soil. In this part of the world, a fungus comes with the seeds, known as *Cercospora Sequoiæ*, and is very destructive, the young plants scarcely surviving one or two years; and even larger plants, brought from California, have a hard struggle for life. But it is found that a spraying with copper solutions is effective in checking the fungus growth, and in two or three years utterly destroys it.

WEEPING BEECH.—The so-called weeping trees are a puzzle to the student of nature. Trees usually desire to ascend,—and yet there is, among all species, an occasional individual that prefers to have its branches point to the ground. The learned call them geotropic, but the great name affords no explanation of the cause of this peculiar taste. All that has been learned is that the weeping tree is, on the average, a weaker grower than the normal

A LARGE WEEPING BEECH AT MR. C. B. DUNN'S, CHESTNUT HILL, PHILADELPHIA.

form. A low vital power, unable to cope with gravitation, would seem to be the exciting cause. The weeping form of the English Beech is, however, a rather stronger grower than is usual with its class, and, having generally one straight, strong trunk, the tree can be trained into an arbor form. On the whole, there are few more desirable weeping trees than the beech.

WHAT IS THE SHAMROCK?—During recent years, literature has been abundant in the attempt to prove that the clover could not have been the ancient Shamrock of the Irish, but that it must have been the *Oxalis Acetosella*. The main argument has been that the clover was an introduction from the continent of Europe, and could not have been in Ireland at that time. A correspondent of the London *Gardeners' Chronicle*, W. G. S., goes over the whole literature of the subject. He shows that it was not until 1830, when J. E. Bicheno, a former secretary of the Linnæan Society, started a doubt, on the subject, in a paper read before that Society. W. G. S. quotes from publications, with their dates, going back hundreds of years, showing clearly that the Shamrock was clover, and nothing else but clover. Indeed, the correspondent shows that, in very early Christian times, long before St. Patrick's birth, the clover leaf was used as an emblem of the Trinity.

GINSENG.—I notice inquiry about the raising of Ginseng. It seems to be the idea that it must be raised from seed. I think it can be raised quicker and easier from root cuttings. I am convinced that, to get it from seed, they must be fresh. In root cuttings, they can be cut into quite small pieces, and nearly every piece will form a plant. Set them in leaf mould, in a shady, well-drained place. I had the Ginseng fever once.

Southwick, Mass. EDW. GILLETT.

SCALE INSECTS.—Those who have not much acquaintance with the practical intelligence required by a good cultivator, are very much alarmed at the progress in distribution of the scale insects, or other injurious insects, by the sale of nursery plants. Every good nurseryman or tree grower, who is worthy of the title of "good," perfectly understands how easy it is to destroy these insect pests, and no good nurseryman, who values his reputation, would for one moment think of distributing nursery stock with insects of this class upon it. The theoretical leaders are making great outcry against the spread of these noxious insects, and in many States they are urging legislature to have nursery stock inspected before it is sent out. That there are men who are indifferent about having clean nursery stock, is certain; but these are not among those who have been called good, intelligent nurserymen. The proper course would be to impose a fine on those who were guilty of such indifference. To this, there would be no objection; but it is the height of absurdity to employ, out of taxation, men to examine the stock of nurserymen, who sometimes know more about such matters than those who are sent to examine it.

FORESTRY IN AMERICA.—While our daily papers, early in May, were burdened with editorials showing how cities, in many parts of Europe, raised forests and paid the whole municipal expenses out of timber sales, a single forest fire in New Jersey was raging until a tract of 60,000 acres of valuable timber was burned over. The fire started among the dead wood and rubbish gathered in the underbrush, which our forestry leaders tell us is so essential in American woods in order to retain the water and fill the springs! European forestry seems to understand how to get plenty of spring water without forest underbrush, and the risk of forest fires.

THE BROOM-RAPE.—The Broom-rape derives its name from its rapacious character as a parasite on the roots of the Broom. It belongs to the genus *Orobanche*,—and the *Orobanche minor* is the one that seems to have found a home in this country. It has frequently been recorded, of late years, as appearing in florists' greenhouses, where it seems to have taken a special liking to the Zonale Geranium. In every case, where the plant has been brought to the writer's attention, the Geranium was the host plant. A fine specimen, nearly two feet in length, though with the usual slender stem, of *Orobanche minor*, was recently brought to him by Mr. Vanetta, of Philadelphia. The Geranium, to which it had attached, was itself grown as a window plant.

NEW OR RARE PLANTS.

THE CEDAR OF LEBANON.—Few trees are more famous, and deservedly so, than the Cedar of Lebanon. It has a place in sacred and profane history. It carries us, indeed, into the prehistoric age, for figures of the cones are found, in Babylonian tiles, as representing the tree of life, with nothing to explain them but the story they tell of themselves. No dead trees were found in the olden time, and thus it became emblematical of the tree of life. The Deodar Cedar, of India, a mere variety of the Cedar of Lebanon, is still venerated by the natives, and receives its name of Deodar from the same legend.

It suffers, in severe wind storms, at a low temperature, in much the same manner that most of our native evergreens do at times,—but no more,—and may be classed among the perfectly hardy trees for out-door culture. The specimen from which the enclosed photo was taken is growing in Fairmount Park, Philadelphia.

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THE DAWSON ROSE.—One of the most beautiful hardy roses of recent production is the Dawson, named for Mr. Jackson Dawson, of Arnold Arboretum, Boston, Mass.

In effect, it resembles the Japanese *multiflora*; but the color is a most beautiful shade of pink. The flowers are large, in clusters, and very abundant. It will undoubtedly rank with Crimson Rambler in popularity, if it be pushed, and will probably lack the susceptibility to mildew possessed by the latter.

TREE OR BUSH IVIES.—What has been the experience with Tree Ivies in this country? As varieties of *Hedera Helix*, which thrives in certain favorable conditions, and is used everywhere extensively, it is reasonable to suppose they would prove satisfactory. But, in the absence of positive facts, MEEHANS' MONTHLY does not feel in a position to answer the question. If successful, they should be largely used, the compact, bushy growth and ornamental leaves being adaptable to many purposes.

NEW ROSES EXHIBITED BY THE NATIONAL ROSE SOCIETY.—At a recent exhibition, held under the auspices of the National Rose Society of Great Britain, some new roses of doubtless great merit were brought forward, among which were the following:

"Conrad Ferdinand Meyer is said to have been raised by successive crosses, in which were used Gloire de Dijon, Duc de Rohan, Marechal Niel and *Rosa rugosa*. The flowers are nearly four inches across, very fragrant, double, and of the beautiful color characteristic of LaFrance.

Soleil d'Or was obtained by crossing Persian Yellow and Antoine Ducher. In character, it most resembles a hybrid perpetual, and pro-

form. A low vital power, unable to cope with gravitation, would seem to be the exciting cause. The weeping form of the English Beech is, however, a rather stronger grower than is usual with its class, and, having generally one straight, strong trunk, the tree can be trained into an arbor form. On the whole, there are few more desirable weeping trees than the beech.

WHAT IS THE SHAMROCK?—During recent years, literature has been abundant in the attempt to prove that the clover could not have been the ancient Shamrock of the Irish, but that it must have been the *Oxalis Acetosella*. The main argument has been that the clover was an introduction from the continent of Europe, and could not have been in Ireland at that time. A correspondent of the London *Gardeners' Chronicle*, W. G. S., goes over the whole literature of the subject. He shows that it was not until 1830, when J. E. Bicheno, a former secretary of the Linnæan Society, started a doubt, on the subject, in a paper read before that Society. W. G. S. quotes from publications, with their dates, going back hundreds of years, showing clearly that the Shamrock was clover, and nothing else but clover. Indeed, the correspondent shows that, in very early Christian times, long before St. Patrick's birth, the clover leaf was used as an emblem of the Trinity.

GINSENG.—I notice inquiry about the raising of Ginseng. It seems to be the idea that it must be raised from seed. I think it can be raised quicker and easier from root cuttings. I am convinced that, to get it from seed, they must be fresh. In root cuttings, they can be cut into quite small pieces, and nearly every piece will form a plant. Set them in leaf mould, in a shady, well-drained place. I had the Ginseng fever once.

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INTENTIONAL SECOND EXPOSURE

duces double flowers three to four inches across, of very deep apricot color, shaded in the centre with orange. The foliage is like that of Persian Yellow.

The Lion is a large, single-flowered rose. It is bright rosy-crimson with a white centre. It is a seedling from Crimson Rambler crossed with Beauté Inconstante."

The exhibition was graced by Her Majesty Queen Alexandra, to whom was presented a bouquet consisting of roses named in her honor—Rose Queen Alexandra and Rose Her Majesty.

PICEA CONCOLOR. — Though by no means new, the Concolor or Colorado Fir is rarely seen among specimens on lawns. This is not because of its lacking adaptability and beauty, for it is one of the best evergreens of its class for hardiness and fine appearance.

Its ability to stand high winds has been questioned; but results and its natural location speak in its favor. Beautiful specimens are known to be thriving close to the seacoast—one of the most trying situations.

The symmetry of growth and distinct foliage are marked; while the color is quite similar to that of the Colorado Blue Spruce in many instances—rarely as fine.

THE HARDY FLOWER GARDEN.

IRIS TECTORUM.—This beautiful Iris species is now blooming in American collections. It was first described by the Russian botanist, Maximowicz, in 1871, who received the specimens from Japan. The leaves are strong and vigorous, much in the line of the well-known Japanese species, *I. K. lævigata*, or, as it is sometimes called, *I. Kæmpferi;* yet it is quite distinct. The flower does not extend beyond the leaves, but is large and showy, the three outer floral leaves or sepals being three inches long and about an inch and a half broad. They are of a violet color, prettily marbled with purple, and have a very prominent, white, purple-mottled, fringed beard in the centre.

The three sepals, or second series of corolla leaves, are nearly as large as the sepals, and the three flattened stigmas forming the inner series are purple with white margins and prettily fringed at the apex, making a very showy flower. It has proven itself very hardy and suitable for dryish locations.

SUPPLEMENTING OLD-FASHIONED FLAGS.—No garden of popular, old-fashioned flowers seems complete without the Flag, or German Iris. But with modern appreciation for the wonderfully beautiful Japanese varieties, the *older* varieties should be supplemented by the new.

In moist soil, the Japanese Iris flowers are of immense size, graceful and very distinct in character. Their blooming season follows the older kinds, making them additionally valuable. The colors and markings of the petals are more varied than the German.

The Oriental Iris is another indispensable kind to make a succession of bloom; while the dark blue flower is exquisite. It is of the *Sibirica* type, but has shorter flower stalks.

PHLOX PANICULATA.—The beautiful and showy flowers of *Phlox paniculata* (or *P. decussata*, as the hybrids are frequently known), form one of the most attractive features of the hardy borders during July and August. Those who have not seen an up-to-date collection have no idea of the wonderful strides made both in size and color.

In no class of plants is the contrast greater between the very poor varieties and the good ones. I have often felt convinced that the reason why the Phloxes are not more popular is because they are not better known, the old-fashioned purple, a white and perhaps one or two other varieties being generally associated with the name; yet in no genus of plants are the colors more vivid or of greater range, and each year adds to their number. Some of the newer ones are almost blue, a color that seemed almost impossible a few years ago,—likewise the vivid crimson and salmon tints.

Sown early, they bloom the first year from seed and are very interesting; but they seldom produce kinds equal to the named varieties, the majority reverting to the old-fashioned purple type.

Plants, left from year to year without special attention, gradually deteriorate in color, so that it is necessary to propagate and keep the borders supplied with young and thrifty stock.

Cuttings taken from the young growth when about three inches high, in spring, root very readily and flower the first year, forming heads of bloom on a single stem, and, although they do not attain their normal height the first year, make very showy plants and arrive at their best about the second and third, when the stock should again be renewed.

E. HEMMING.

THE OLD GARDEN.—We all love old gardens. It may be due to half-slumbering memories, racial and inherited, of that plantation by the Euphrates and Tigris, of which we have heard so much.

An angel met us at the gate withal, not bearing a flaming sword or even a flaming countenance, but with features radiant with good-natured welcome. With somewhat of oriental dignity, she threw back the gate of the picket fence and said, "Enter here, nor yet abandon hope!" We did enter and were at once in paradise—an acre teeming with every dear old flower. We were first transfigured before a myriad of Annunciation Lilies, with pure white trumpets sounding "Hosanna in the Highest!" How lovely they were, each glorious flower spotted merely with its own benison of gold.

Then, as it was near twilight, we stopped to see the opening of the evening primroses. We stood, awed, with finger upon lip, not uttering a word. With much the same holy feeling, we once gazed upon the Cyclorama of the Battle of Gettysburg and fancied the reincarnation of the dead. Before us was fought a ghostly battle—the advance, the heroic charge, the brave defence, the retreat. How dared one speak, much less smile or laugh, in such a presence? So, with the evening primroses, we watched in silence as the splendid creatures unfolded their pavilions, and each satin petal slid into its place. The calyx would suddenly turn down, too, almost with the motion of a salaam. While we stood there, some thirty superb blossoms underwent their apotheosis—and then, in the half light, seemed almost like the great, soft, downy moths which visit them. There is a puff of odor at the transcendent moment. It is the call to the sphinx—and lo he is here!

Next day, we saw the garden under other aspects—and under all it is beautiful. In one corner of it stands an immense Honey Locust, with light, delicate, pinnate foliage, a very king of his kind. Beneath and around him grow ranks of skirmishing larkspurs in our own infantry blue. Methinks those coreopses yonder, in yellow, are the cavalry—an arm of the service that ever appeals to me. There were several kinds of these. Among the real old-time plants, carrying us back half a century, were valerian, beloved of Grimalkin; thyme, suggestive of roast turkey; Southernwood, with subtle odor; bluebells and money. And what shall we say of the poppies, tossing their turbaned heads, waving their gaudy pennons, or bearing their silver caskets of seeds!

A charm of this old garden, and of any garden that I love, is that the plants come up when and where they will, and no questions are asked. Is this that I admire a weed or a flower? Who knows and who cares? This is not the place to study pedigree—and, if one does, he soon detects bars sinister even in the most pretentious families. Among charming things, we had not seen for a long time, were the blue Anchusa, cousin of the forget-me-not and bugloss,—and Gypsophila, or babies-breath. What a lovely common name! Its Greek one, I have to own—"lover of plaster of Paris"—is far from poetic, though it may be euphonious. All through this garden—which is not a dream realm, but an actuality—troop long trains of Rudbeckias, for my friend loves a pretty thing when she sees it, even if it occurs in a hayfield. It is a delight, in these midsummer days, to stroll in such a garden, to revel in its colors, to delight in its forms, to guess at or perhaps answer natural riddles.

We need not sail to fair Cathay,
Or in the land of Afric stray—
Let others o'er creation roam;
We find our wonders here at home!

Providence. WM. WHITMAN BAILEY.

FRUITS AND VEGETABLES.

PROFITABLE FRUIT CULTURE. — Southern Missouri has been regarded as a veritable gold field for fruit growing, but at the meeting of the State Horticultural Society, at Des Moines, last winter, Major Holsinger spoke as follows:

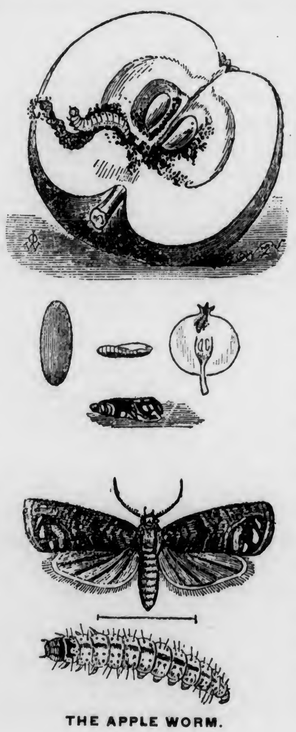
"The great apple belt of the Ozarks is a misnomer. I think the fruit interests of that section suffered more severely, from the Feb-

ruary freeze of '99, than did those of Iowa. Large peach orchards, some of them containing 20,000 trees, were entirely killed. Perhaps 50 per cent. of all the fruit trees and vines were killed.

"I have grown fruit, on a large scale, in the Ozarks, and know whereof I speak. Mr. Gano and I have been the promoters of an orchard of 2,800 trees in Southern Missouri. We expected to make that orchard a great success financially, but it has been a failure. The whole project has been thwarted, either by Providence or something else. The orchard, at this time, is almost entirely worthless."

The fact is, that there is no business of any kind, in the city or on the farm, that has a regular series of prosperity from year to year. The wise city business man takes care to have a surplus, made up from extra profitable years, on which to fall in less successful ones. Intelligent fruit-growing has been found as profitable as any other business, when conducted on good business principles,—and to this, many a good Ozark orchardist, as well as orchardists elsewhere, can bear abundant testimony. But one must look out for thorns and thistles that are sure to spring up along the road.

THE APPLE WORM.—The progress of knowledge has made it very easy to guard the apple tree against all its fungus and insect enemies,—the apple worm, perhaps, excepted. This still continues to be one of the most formidable foes of the orchardist. Though it has been figured and described often, it is not as well known among those engaged in general gardening as it deserves to be. We reproduce, for our readers, an illustration showing the progress of the insect in every stage, until its final destruction of the apple, for all know that a wormy apple soon becomes rotten. The winged insect is a night-flyer, and, it is said, can be caught by traps in which a light is used. The older methods consist of gathering and destroying the apples before the worms escape, and fastening hay bands about the trunks, in which the larvæ gather and may then be burned.



THE APPLE WORM.

These insects, known as fruit worms, belong to the order of *Carpocapsa*. The one illustrated is called *Carpocapsa pomonella*, and that found in prunes and apricots *C. funebra*, whilst that of chestnuts is the *C. splendana*.

IMPROVED CHESTNUTS.—In some respects, the word "improved" is a misnomer in connection with chestnuts. The American Sweet Chestnut is the only perfectly satisfactory one as regards flavor, and all others are not "improvements" in that line. But size is an important factor; and early production is essential to great satisfaction, and to obtain these, the "improving" is resorted to.

To see a small, slender chestnut tree, with two or three branches bearing several immense burs, is at least interesting—indeed it is ornamental. This is the case with trees grafted with such varieties as Paragon, Numbo, etc. They commence bearing while yet so young, and yield a succession of large harvests before the common American species commences to think about producing any, so to speak. The nuts are large, and, though of indifferent quality, are always in demand.

Chestnuts are difficult to graft, and, therefore, apparently expensive; but they are no trouble to cultivate and care for, and would give more pleasure to many persons than a fruit tree.

At present, the market demand for large chestnuts is great; and "chestnut orcharding" is considered very profitable. But the fact does not seem to have thus far been made well known, as very few large plantations have been made.

BIOGRAPHY AND LITERATURE.

THE CEDARS OF LEBANON.

And such the colouring fancy gave
To a young, warm, and dauntless Chief,
One who, no more than mortal brave,
Fought for the land his soul ador'd,
For happier homes and altars free,
His only talisman, the sword,
His only spell-word, Liberty!
One of that ancient hero line,
Along whose glorious current shine
Names, that have sanctified their blood
As Lebanon's small mountain-flood
Is render'd holy by the ranks
Of sainted cedars on its banks!

THOMAS MOORE.

MRS. THOMAS P. JAMES.—Among recent deaths, date not given, though it must have been some time in August, that of Mrs. Thomas P. James deserves to be recorded. She died at Ottery, near St. Mary's, in Devonshire, England, at her daughter's, Mrs. J. Rose Troup, with whom she went to live after the death of her husband, Thomas P. James, in 1882. She was born at New Ipswich, New Hampshire, on September 2, 1819, and, marrying Mr. James, in 1851, removed with him to Philadelphia. He became one of the leading druggists of that city, and was well skilled in botany and gardening. He discovered Pursh's manuscript diary of his journey to the Great Lakes, in the American Philosophical Society closets, and had it published. As secretary to the Pennsylvania Horticultural Society, together with Caleb Cope, as president, this society reached an enviable reputation. Mrs. James was also a botanist of rare accomplishments. In a knowledge of mosses, she ranked among the leading American authorities; and, though of an unpretentious, modest disposition, had an extensive correspondence with those who were desirous of learning all about these beautiful plants. Another daughter, Mrs. S. M. Gozzaldi, still survives her, living at Cambridge, Mass.

A BOOK ON VIOLETS.—Miss Faustine Butler, 50 Forest Avenue, Portland, Me., is famous as a painter of wild flowers. Her work has been exhibited and admired at many expositions. She proposes to get some of her material before the public in book form, and will begin with the violet. Every known species, that can be obtained, will be painted in their natural forms and colors,—and the descriptions, though as strictly accurate as science would, will be in popular style. Such a work will surely be a treasure in the library of lovers of flowers. As the work will involve much labor and expense, the publication will probably be by subscription. For further particulars, correspondence may be had directly with the lady.

A PRACTICAL GUIDE TO GARDEN PLANTS.—By John Weathers, late Assistant Secretary to the Royal Horticultural Society, graduate of the Royal Gardens, Kew. Published by Longmans, Green & Co., New York.

This is a magnificent work of nearly 1,200 pages, and with 163 illustrations. All popular garden plants are described; and garden operations are given in detail. To give an idea of the cultural character of the work, as it relates to hardy border plants, we open, at random, and find it refers to *Liatris*. We are told there are 16 species, all natives of North America. Cultural directions follow for all the genus. Seven are especially described. Of the Kansas Gay-Feather, it gives all the popular characters by which it is known, and an account of the beauty for which it is admired, and says it is best treated as a biennial; grows well on dryish soil; seeds should be sown in autumn and transplanted where they are to remain in the flower garden in early spring. There is a glossary of the leading terms used in botany and gardening; and lists of plants and flowers, suitable for peculiar positions and uses, are numerous. It is, indeed, a complete cyclopædia of modern gardening, and there are few to whom it will not be of practical value.

Being an English work, by an English author, it is, of course, written from an English standpoint,—but gardening, as an art, is

so highly developed in the Old World, that, in the few cases where a difference in practical teaching between garden art in the two countries appears, it is more than made up by the additional work covered by the wider experience of the Old World.

PRUNES.—If people are ignorant, it is not for want of chances to know. Here is a booklet issued by J. A. Coraham, District Passenger Agent, San Jose, Cal., free for all that ask for it, that tells as much about prunes as one may find in a blue- and green-bound, dollar volume, and for 15 cents, a complete cookbook of the prune. Even good Eastern fruit-growers may not know, till this booklet tells them, that the best growers do not transplant the prune, but set out an apricot or peach stone, and then graft the prune on it. One may wonder where all the prunes go, there being no less than 150 millions of pounds of cured prunes marketed from California last year. It took 6,000 freight cars to carry them to market.

NOTES AND QUERIES. — *Silver-rod.* — This plant-name, for *Solidago bicolor*, is not in the dictionaries.

Hopniss.—This word, a name for *Apios tuberosa*, is not in the dictionaries. It occurs in "Wild Flowers of North America" (1894), near pl. 216. It is said to be an Indian name, which is a statement open to some doubt.

Sotol.—This plant-name, for *Dasylirian Texanum*, is not in the dictionaries.

Spatlum.—The plant, *Lewisia redivina*, of the Pacific States, is called Spatlum (not in the dictionaries). The roots are eatable, and were much enjoyed by the members of the famous expedition of Lewis and Clark.

Kouse.—The plant, *Peucedanum ambiguum*, of the western U. S., is called Kouse; the root is edible. Not in dictionaries.

Sago.—In the Western States, the plant, *Calochortus luteus*, is called Sago; this is said to be its Ute name. The root is edible. The dictionaries do not give the word in this sense. [Sego, we believe, is the correct spelling.—EDITORS.]

Squatmore.—The Standard Dictionary gives this as "a plant used as a remedy for bruises." What is the scientific name of this plant? [One may have to look among the Stonecrop family for the answer to this. They were the general remedy for assuaging inflammations resulting from wounds and bruises. *Sedum* is derived from *Sedeo*, to assuage, and not from *Sedo*, to sit, as the dictionaries have it. It should be pronounced *Sĕdum*,—not *Sēdum*.—EDITORS.]

CURATOR OF KEW GARDENS.—Mr. Geo. Nicholson, the curator of Kew Gardens, and whose valuable "Dictionary of Gardening" has endeared him to garden-lovers everywhere, has resigned his position because of ill health; but it is presumed that his useful pen will not remain inactive. Mr. William Watson is promoted to Mr. Nicholson's position, and Mr. W. J. Bean takes Mr. Watson's place.

GENERAL NOTES.

CASCARA SAGRADA.—It is said, that the drug Cascara, extensively written about in medical journals, is the bark of two American Buckthorns—*Rhamnus Purshianus* and *R. Californicus*.

FRUIT IN ENGLAND.—The *Journal of Horticulture* says that plums and gooseberries have been so abundant this year, in England, as to be not worth the cost of gathering in many cases.

GRAPE CULTURE IN NEW SOUTH WALES.—New South Wales seems entering into lively competition with California in fruit culture. Regarding the grape, the London *Gardeners' Chronicle* says:

"In 1861, there were, in New South Wales, Queensland, South Australia, Victoria and Western Australia, 7,009 acres under vine-cultivation; in 1896 the area had become increased to 58,642 acres, the product being 5,606,035 gallons of wine, 7,901 gallons of brandy, 63,665,280 lbs. of table grapes, and 2,145,360 lbs. of raisins. The grapes grown in New South Wales are equal, in size and flavor, to the finest grown in continental Europe, but both their cultivation and the production of wine from them remain imperfectly developed as a whole. In 1897 the area under wine cultivation in the colony was 8,061 acres, producing 794,256 gallons of wine, 7,134 gallons of brandy, and 6,462,400 lbs. of table grapes. The raisin manufacture is still one of the industries of the future in New South Wales."

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PRINOS VERTICILLATUS

PRINOS VERTICILLATUS.

BLACK ALDER.

NATURAL ORDER, AQUIFOLIACEÆ.

PRINOS VERTICILLATUS, Linnæus.—Leaves lance-oval, serrate, acuminate, pubescent beneath; flowers axillary, the fertile ones aggregate, the barren sub-umbellate. Leaves narrowed at the base into a short petiole, uncinately serrate, with prominent, pubescent veins beneath. Flowers white, dicœcious, small, the pedicel scarcely more than one line in length. Berries scarlet, in little bunches (apparently verticillate), roundish, six-celled and six-seeded, permanent. Wood's *Class-book of Botany*. See, also, Gray's *Manual of the Botany of the Northern United States;* Chapman's *Flora of the Southern United States*, and Britton & Brown's *Illustrated Flora of the Northern States and Canada*, as *Ilex verticillata*.

Often growing in swamps, with members of the alder family, and with leaves somewhat resembling an alder, our plant has come to be generally known among the people as Black Alder,—the dark wood distinguishing it from the usually lighter bark of the true species of Alder. The popular mind has never associated it with the hollies, of which the European *Aquifolium* is the popular type. Nor have botanists thus associated it, to any great extent, —though Duhamel, the author of a treatise on the trees and shrubs cultivated in French gardens up to 1755, refers to it as a deciduous holly,—*aquifolium foliis deciduis*,—suggested as much by the berries as anything else. Our early botanist, Clayton, seems to have been the first to employ the name *Prinos* to our plant. He, like Duhamel, only noted that it had "the berries and seeds of a holly." In Schreber's edition of Linnæus, the name is adopted and our species described,—and so it has remained as distinct from the true hollies to our times. Aside from the popular failure to see anything like the conventional holly in our plant, botanists believed there were good characters to distinguish it. The true hollies—*Ilex*—seemed to have the parts arranged on the type of two, —three prevailed in *Prinos*. Thus we find, in the former, a four-cleft calyx and corolla, eight stamens, and a four-celled berry; in *Prinos* we have the parts in three, six, or nine. There are occasional variations from this general rule, with the result of abolishing *Prinos* as a distinct genus from *Ilex*, or the true hollies. In recent times, it has come to share, with the holly, the honor of being chief in the Christmas adornments in the Atlantic seaboard States. The holly is often dicœcious,—the male plants not bearing berries. The bright berries among the green leaves is a prominent feature of admiration. The male holly, once neglected, is now beautified by having fruit of our plant ingeniously attached to the holly branches. This is especially the case when the holly is worked into wreaths.

The holly of Europe, *Ilex Aquifolium*, is the *aquifolium* of classical writers, notably Pliny, the great Roman writer on natural history. His description of the *Aquifolium* tree is conclusive. Linnæus was fond of continuing ancient names to represent the adjectives in his binomial system, and, in this way, the old Roman name of the plant has been preserved to us. The term *Ilex*, by which we now know the holly family, was employed to designate the oak, which now produces the nut-galls of commerce, botanically *Quercus Ilex*, or *Quercus coccifera* of some authors. The holly and Christmas seem closely associated in the minds of polite writers. Says Lowell, in the vision of Sir Launfal:

"Within the hall are song and laughter,
The cheeks of Christmas glow red and jolly,
And sprouting is every corbel and rafter
With the lightsome green of ivy and holly."

The origin of the prominent place occupied by the holly in Christmas festivals is not known. It is possible that the bright red berries seemed to add cheerfulness to the green of the foliage, —but this could not be all. It seems to have been employed in the olden Scandinavian mythology, long before Christmas Day was thought of. This, indeed, is one of the latest of religious festivals. In the earlier Christian

COLOR PLATE

PRINOS VERTICILLATUS.

BLACK ALDER.

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COLOR PLATE
INTENTIONAL SECOND EXPOSURE

ages, all efforts to identify the birthday of Jesus failed, and, at length, it came to be celebrated with the birth of a new year. Evergreens were largely used in decorations on these festival days, and the holly was doubtless employed among others. If any reason could be found for the special veneration of the holly, it might be found in connection with the ancient Druidical belief that the woods were peopled by the spirits of the departed, and that it was the duty of the living to care for them. In very severe weather, evergreens were hung in dwellings, so that these spirits might take refuge and have protection. In this respect, the prickly holly would naturally present special advantages. In ancient times, when sentiment was a greater moral force than it is to-day, plants and flowers served especially to illustrate great truths. To teach that we already owed all to Providence, without any claim to additional reward, the great Chinese philosopher, Lao-tze, a contemporary of Confucius, nearly three thousand years ago, wrote: "All plants shoot up in spring without a word spoken, and grow without a claim to their production. They accomplish their development without any display of pride, and the results are reached without any assumption of ownership,"—and this spirit of thankfulness was again florally illustrated, a century later, by the injunction to "consider the lilies of the field." It may be safely concluded that, in some way now lost in the obscurity of time, the special veneration for the holly had some deep symbolical association.

So far as our representative of the family is concerned, *Prinos verticillatus*, no sentimental memories surround it. Its relation to mankind is of purely material record. During the war for the Union, the Southern people were sorely pressed for medical material. Dr. Peyre Porcher was employed to investigate the resources of the Southern fields and forests. Of our plants, he notes that it is also called Winter-Berry as well as Black Alder, and says: "The berries and bark are tonic and astringent, and are used in intermittent fevers, diarrhœa, and diseases connected with a debilitated state of the system, especially gangrene and mortification. It is a popular remedy in ill-conditioned ulcers, chronic cutaneous diseases; administered internally and locally as a wash. The bark and berries possess, in an eminent degree, the properties of the vegetable astringents and tonics, combined with antiseptic powers highly spoken of. They are extensively prescribed, in some parts of the country, in diarrhœa, and, as a corroborant, in dropsy. The leaves are employed as a substitute for tea. The plant was used by the Indians. It may be taken in substance, in doses of thirty grains to a drachm, to be repeated, or a decoction made with two ounces of bark to three pints of water, of which three ounces may be taken several times a day. A saturated tincture of the bark and berries has also been used. Bigelow did not speak highly of this plant; but W. P. C. Barton extols it and recommends it to the profession."

The Black Alder has not much effect in floral scenery during the summer and autumn when other plants are in their glory. The flowers are of a greenish-white and inconspicuous. For the most part, the plants are dicœcious,—for, though there appear to be stamens or pistils in each plant, one or the other is usually too weak to perform its functions. Occasionally, however, both will be potential, in which case we have hermaphrodism, and abundance of berries on isolated plants.

Not even do the leaves contribute anything to the fame which an American autumn has achieved by its wealth of colored foliage, as they have no shade of brilliancy in their decay. They pass away of a dull black hue, and fall at once when the berries begin to take on their bright, winter hue. In this respect, however, they contribute fully their share of pleasure to mankind during early winter. Without the profusion of their gay berries, many of our meadows would be dull, indeed.

The Black Alder has a wide geographical area. Dr. Robinson, in Gray's "Synoptical Flora," has it as from Canada to the Great Lakes, south to South Carolina, Illinois and Alabama; and it is also found under one of its slight variations in Japan. Herbarium specimens indicate considerable variation. In the Schweinitzian Herbarium, the leaves in the Salem, N. C., plant are three inches long by less than an inch wide; while the leaves on a Mt. Desert specimen, of Redfield, are almost round. Mr. Merritt L. Fernald, in *Rhodora*, vol. 2, p. 104, would even give varietal names to some of the forms. His specimens are very light and twiggy.

EXPLANATION OF THE PLATE:—1. A branch from Eastern Pennsylvania, taken in October. 2. Cross-section of a fruit.

WILD FLOWERS AND NATURE.

NATURE NEVER FAILS.

Yet are thy skies as blue, thy crags as wild;
Sweet are thy groves, and verdant are thy fields,
Thine olive ripe as when Minerva smil'd,
And still his honied wealth Hymettus yields;
There the blythe bee his fragrant fortress builds,
The freeborn wanderer of thy mountain-air;
Apollo still thy long, long summer gilds,
Still in his beam Mendeli's marbles glare;
Art, Glory, Freedom fails, but Nature still is fair. BYRON.

INFLUENCE OF EXTERNAL CONDITIONS IN PRODUCING VARIATIONS. — Continuing a thought introduced by the last paragraph in the leading article, *Prinos verticillatus*, external conditions have only a secondary influence on producing variations,—the primary cause is the varying degree of life-energy in the plant itself. The English holly illustrates this clearly. Plants do not flower till the vegetative or growth-force has been somewhat lowered. With this decrease in power, the upper leaves become smaller and entire, losing their marginal thorns. The more vigorous the branches, the thornier the leaves. Some local conditions may, therefore, affect the growth-force, and some change of form may follow. To a certain extent, these changes become hereditary,—but reversion occurs in a gradual way, when the original incident in the change is removed.

VARYING COLORS IN PLATYCODON.—I send, by mail, a specimen of *Platycodon grandiflorum*, which shows flowers pure white, purple, and white with purple stripe. This may not be new to you, but it seemed worth sending, and if as peculiar as it seems to me, it might be worthy of a note in your excellent MONTHLY.

Trenton, N. J. AUSTIN C. APGAR.

[*Platycodon* behaves in this way, sometimes,—but the fact is worth noting in order to incite inquiry as to its cause, for other kinds of flowers are equally freaky. In a general way, we know that bright colors in leaves and flowers are coincident in a greater struggle for life. On dry deserts, on mountain tops, or in icy regions, the prevalent colors are of the warmest types. The same law probably rules in striped or blotched flowers,—but the exact manner of ruling in these closely related cases has not been explained.]

ROT IN TREES.—Can we never get at the simple facts? "J. M." writes: "Does not the possessing or not of a sound or an unsound trunk depend altogether on the admittance or not of outside air to it?" I think not. I have known a great many holes bored into trees and left open, without producing rot, and a great many limbs removed by man and storms, and the knots remain uncovered till grown over, or for years without being grown over, and without rot of knot or trunk. Not only do uncovered knots admit air into the trunk, but since trees feed largely from the air, I suppose air is always present in the trunks. Without stopping to quote facts in proof, is there any doubt that there is air in trees? As to producing rot, we get water out of wood, and let air take its place to prevent rot. Fell a beech, for instance, in March, and quarter a good-sized, four-foot stick from it, and notice how soon its ends and cleft sides will season and rot, commencing under the bark farthest from the ends and sides. The air and shrunken pores at the ends of the stick obstruct the free passing out of the sap from beneath the water-tight bark, and rot ensues, the same as, I think, it is very liable to do when a knot full of sap is covered vapor-proof. Does "J. M." think that painting the sides and ends of said beech stick would prevent the rot? Years ago, I had experience in painting a large, green, White Pine liberty pole. "J. M." says: "Moisture will never start rot of the trunk, or dead wood of the centre, so long as this centre is surrounded by living wood, excluding air from it." I cannot understand how any one, who has sawed logs in a lumber mill, or felled timber in the forest, can make such a statement. Rotting knots often cause decay in the trunks, but that

all decay in trunks is caused by rotten knots, I do not think true. How is it with those tall White Pines that have streaks of red rot in them, from the stump far up into the top? There will be a great many of them on some lots and none on others. How about small rots (only a few feet in length) in the butts of large pines? How about the hollow-butted White Oaks, whose large, black cavities extend up from the ground four feet or less? One of the finest White Oaks I ever cut, greatly disappointed me by proving to be rotten from the stump to far into the top with a white rot. I never saw any possibility of these rots resulting from rotten limbs, and "J. M." is the only one I ever knew to suggest it. Certainly, these rots are surrounded by living wood and generally not traceable to knots.

Exeter, N H. J. D. LYMAN.

EXTRACT OF WITCH-HAZEL.—The October number of the MONTHLY contains a beautiful and timely illustration of the Witch-Hazel, as its time of blooming approaches. Soon, its yellow threads will be exposed to the rude winds of autumn—hanging out among its partly colored and broken foliage, and ripening fruit in which the children nut-hunters find nothing but occasional insects.

Agriculturally, the plant has no value, as it hardly grows large enough for fuel, but makes a bushy clump full of branches. It is found abundantly in bush pastures, and the only good thing to be said about it is that it acts as a nurse plant for better forest growth, to which it gives way.

Medicinally, it has a great reputation. Pond's Extract of Witch-Hazel is manufactured by thousands of gallons in Middlesex County, Conn., as a remedy for wounds, bruises, etc. It is sold by the bottle and the barrel, and is in wide demand.

Now comes in the agriculture. Witch-Hazel brush—the whole plant, body and branches—is cut up short in a huge straw-cutter, and a fluid extract is prepared.

The farmers get just enough for cutting and delivering the brush to pay for the labor, thus getting pay for clean pastures within the reach of the factories. Other parts of the State would like to share, with Middlesex County, in this market for an otherwise useless product. We had our first frost, last night, though the woodlands are already tinged with the hues of autumn, which this year should be glorious, for the foliage is very healthy and luxuriant.

West Cornwall, Conn. T. S. GOLD.

LEAFLESS PLANTS.—So accustomed are we to think of plants as green, we do not realize how many not only never exhibit that color, but, indeed, possess no leaves. The vast hordes of fungi, indeed, do not even have anything suggestive of foliar organs.

It is not of these, however, that we intend here to speak, but of certain plants of high ordinal relations, which, ancestrally possessing leaves, have come in time to retain merely reminiscent and functionless scales in their place. Most of such plants are what the botanist knows as saprophytes; *i. e.*, such as derive their sustenance either from decaying vegetable matter, or which lead a commensal existence with the host. In the latter case, they appear to serve the host assimilation of nitrogen or other soil constituents, while they, in turn, benefit by the leaf-work of the host.

Various families of plants, in no other way related, are by this saprophytic habit associated and come to resemble each other. Every one says of Indian-pipes, "How fungoid they are!" Yet are they in no way of mushroom origin, but belong to the highly-organized heath family. How one would like to know their history, and how they came to adopt their secret habits! In them, the leaves are reduced to scales,—so pure, white and veinless as to appear made of crystal.

The single-flowered Indian-pipe is familiar in all our darker, colder, northern woods, where its ghost-like flowers always give one a sort of chill. The Pine-sap is less well known. The whole plant is fragrant and contains several flowers in each cluster. It is a curious fact that, while the terminal one is constructed on the plan of five, the lower ones all show the numbers three or four! The Pine-drops is a rare relation of these, found westward of us. Of the same family, too, is the conspicuous, blood-red Snow-plant (*Sarcodes*) of the Sierra Nevada.

A quite remote class of plants, closely affiliated to fig-worts, are the broom-rapes. Among these are the Beech-drops, now in full bloom, and so conspicuous in beech groves. They are purplish or yellowish-brown, much branched,

and from six to twelve inches high. The Cancer-root, or Squaw-root, also occurs in New England, but I have never found it. In spring, however, the Naked Broom-rape, or *Aphyllon*, is common in Rhode Island, with its purple and yellow flower. It is really pretty.

These notes would be incomplete without mention of the coral-roots—members of the Orchis family, presenting the peculiar saprophytic features—and of several species. All of these possess the toothed, much-branched, coral-like rootstocks, from which they derive their very appropriate, scientific and common names.

We might mention certain intergrading forms in all of the families possessing saprophytic features. The change, indeed, appears not to have been abrupt, but transitional. It, no doubt, represents countless cycles of years!

Providence, R. I. WM. WHITMAN BAILEY.

THE ATTRACTIONS FOUND IN A LITTLE SAND.—I was on the Mississippi River shore the other day. I was fern hunting on its banks. There was an immense rock on the shore which jutted out well into the river; as the water was low, I walked out on the rock a considerable distance. The rock was mostly smooth, but there were occasional pockets or depressions in the rock, which were generally filled with sand. This sand had a pinkish color, and I gathered some, which I wrapped in paper and brought home with me, to examine through a magnifying glass. In strong sunlight, I found many diamonds, some rubies, a few emeralds and many pink, rose-pink stones. These rose-pink stones made the coloring of the sand, for there were many of them. Besides these precious stones, was much black sand. Remembering Edison's experiments with black sand, I procured a magnetized tack hammer and swept it over the sand, when lo, and behold! the hammer, when withdrawn, was covered with the minute particles of magnetic iron ore. Now here is a point for those who spend their summers on the seashore,—always carry along a magnifying glass, and a piece of magnetized iron. This will give to their owners a fund of pleasure to draw upon when all else fails.

Festus, Mo. F. K. STEELE.

[Whether traveling or not, every one should have a good lens in his pocket. To children, such a present is often precious. To one little tot, who had a Christmas gift of this character, the first experience was a pinch of salt. "I never knew before that a little salt looked like a pile of square street-paving blocks." A good lens to a child is introducing it to a new world.]

THE ODOR OF FLOWERS.—MEEHANS' MONTHLY has called attention, at various times, to the singular fact, in connection with the supposed close relation between insects and flowers, that odoriferous species are comparatively scarce. Of the very large number of species of violet, only one was thought worthy of being named by Linnæus as *Viola odorata*. The same is true of *Lathyrus odoratus*, the Sweet Pea,—*Reseda odorata*, the Mignonette, and numerous others. The matter has been taken up in the Old World.

"A German botanist is said to have discovered that out of 4,300 species of flowers cultivated in Europe, only 420 possess an agreeable perfume. Flowers with white or cream-colored petals are more frequently odoriferous than others. Next in order come the yellow flowers, then the red, after them the blue, and finally the violet, of which only thirteen varieties out of 308 give off a pleasing perfume. In the whole list, 3,880 varieties are offensive in odor, and 2,300 have no perceptible smell, either good or bad."

Unfortunately the statistics given here, as in so many other cases, are found worthless on analysis. It is said that 4,300 species were examined. Of these, with an agreeable perfume, there were 420; with an offensive odor, 3,880; with no odor at all, 2,300. But these figure up 6,600, instead of 4,300.

And if these were personally examined by the "German botanist," he must have had many more leisure hours than fall to the lot of an American man.

WALKING STICKS.—Instead of importing "pepper-sticks" for making canes, why would not the abundant Floridian shrubs of the genus *Eugenia* be thus utilized? The mangroves of that coast ought also to be turned to some such use. C. W. G.

[The Mahaleb Cherry is grown in Europe for walking sticks. There seems no reason why it could not be done here.]

GENERAL GARDENING.

GARDENING IN OLD AGE.

As when the twilight of a weary life
  Comes on with quietness and purity,
And, after vainly struggling in the strife
  Of pleasure or ambition, from the eye
  The film falls, and the mantling vapors fly,
And man stands forth in his pure, native worth,
  And, after tears for lost years hurried by,
The soul awakens to a second birth,
And for a few hours knows there is a heaven
    on earth. PERCIVAL.

PRUNING FALL-FLOWERING SHRUBS.—It is an oft-repeated piece of advice, yet as often unheeded, that fall-flowering shrubs require winter-pruning, and, usually, severe pruning brings the best results.

The familiar example of such pruning is the large-headed, hardy Hydrangea. An unpruned plant—especially if old—makes a weak growth and small, numerous heads. A plant of any age, pruned back to a strong bud above the old wood, shoots forth with immense vigor, and the heavy cane thus induced makes a large head. How difficult it is to bring one's self to cut off nearly all the wood just made so nicely; but how much harder to see a weakly plant doing its best to support all the old twigs and strong, new growth as well!

The Althæa is another shrub to be considered in the same class—in fact, all fall-blooming plants.

PLANTS FOR ORNAMENTAL HEDGES.—Not many years back, the popular hedge plants in this country were Osage Orange, *Cratægus Pyracantha* and Honey Locust,—aside from the Hemlock and Norway Spruce and Arbor-vitæ, the popularity of which changes but little from year to year. Buckthorn has also been largely used in some sections.

Now, in most mild-climate sections, the "Californian" Privet has largely supplanted all others. The reason for its popularity is obvious, for perhaps no other plant in general use adapts itself so well to all conditions and maintains in all stages a good appearance. It can be kept, almost indefinitely, a small hedge,—say 18 inches in height; or it may be allowed to make a high wall 8 or 9 feet in height. This strong-growing power makes pruning necessary twice a year when desired to keep a comparatively small, bushy hedge; but should one or both prunings be omitted by neglect or any other cause, unlike the Osage Orange, the continuing growth is not rampant and liable to spoil the form of the hedge.

The Californian Privet is not strictly so hardy in some places, and is occasionally supplanted by the hardier European species, *Ligustrum vulgare*, or the buckthorn. The latter is particularly hardy, and makes a nice, ornamental hedge with a little care. In addition to the pretty, dark foliage, the black berries are ornamental.

Other very hardy plants to be mentioned are the barberries, *Berberis Thunbergii* being the most popular. Where a low hedge is wanted of a less formal appearance than a small privet hedge would have, nothing excels this remarkably pretty hedge. The natural average height is 2 or 3 feet. In fall, the distinctive, small leaves turn a most brilliant shade; while the scarlet berries, remaining all winter, are highly ornamental.

The hardiest hedge plants in general use may therefore be considered as follows: *Berberis Thunbergii*, *B. vulgaris*, *B. vulgaris purpurea*, Honey Locust and Buckthorn. *Ligustrum vulgare* ranks next in hardiness, followed by *L. ovalifolium* and Osage Orange.

In placing the Californian Privet well down the list, it should not be considered very serious. Near Philadelphia, it takes the most severe winter experienced to simply injure the tops; and much further north it will stand with no more injury than to kill the tops, serving as a natural pruning.

Age of Plants.—The question is so often asked as to the best size and age of plants to set out, it seems appropriate to speak of it here. Nurserymen offer plants one, two and three years old and over, the heights ranging

from 1 foot to 5 or 6. Some grades are bushy; others, the one-year plants, usually, have but one or two stems.

Naturally, one-year-old plants, standing in the original cutting rows, have fewer roots than older and transplanted plants; but only considering ease in transplanting, these young plants are just as likely to live as older ones. This may not apply to other kinds of plants; the easy-growing privet only is being considered. But, if there are any disadvantages of climate or location, older and better-rooted plants will have greater chance for success. They will stand more hardship and make more uniform growth. Therefore, the planter can not only rest assured that larger plants will be suitable to set out, but will make a more regular and better-developed hedge in a shorter space of time.

FALL-FLOWERING SHRUBS.—There is amongst planters and gardeners, a great demand for fall-flowering shrubs, owing to the fact that there are so few which bloom at that season.

Among the most prominent are Hibiscus, Hydrangea, Desmodium and Caryopteris.

The *Hibiscus*, or, as it is generally known, Rose of Sharon, is quite an old and well-known shrub, which blooms during September and October, bearing flowers with colors varying from white to a dark red and purple. This shrub can be planted either as a specimen or in hedge form, being effective either way.

The *Hydrangea paniculata grandiflora* is undoubtedly the best, if not the most popular, of the above-mentioned shrubs. It bears masses or, speaking more correctly, panicles of large, white flowers, which make a grand sight. It should be planted by all lovers of pretty flowers.

We next come to the *Desmodium*. This shrub is not as well known as it might be. The plant is somewhat of a herbaceous nature, dying down to the ground each year, but, nevertheless, getting stronger. *Desmodium penduliflorum* bears purple flowers, which resemble our common sweet pea, only being smaller, and are borne in great profusion.

Caryopteris is another fall-flowering shrub of great merit. It flowers during late September and October, bearing bright blue flowers in the axils of the leaf-stalks.

PINUS MUGHO.

The above-mentioned shrubs are among the ones generally used by the planter in laying out gardens where a continuous-blooming season is required. W. J. C.

DWARF MOUNTAIN PINE.—The Dwarf Mountain Pine, of high elevation in Europe, comes to gardens in three forms, which botanists have named *Pinus Mugho*, *Pinus pumilio* and *Pinus Montana*. Botanists themselves have since concluded that they are all but varieties of one thing, and class them all as *Pinus pumilio*. Taking them as a whole they,

indeed, seem only dwarf forms of the Scotch Pine. But the individual differences are so great that the nurseryman has to keep the forms separate under their distinctive names, and the beautiful specimen illustrated on page 167, from one growing on the grounds of the Hon. Thomas Potter, of Chestnut Hill, near Philadelphia, is of the kind known as *Pinus Mugho*.

It has been said of Landscape Gardeners that an experienced person can usually tell the name of the landscape artist who designed certain grounds by the kinds of trees and shrubs used to work out his plans. In different parts of the Union, one may occasionally come across one place where dwarf pines are used extensively, and much admiration is excited by the part they play in the beauty scene. It is seldom that a wrong guess is given of the artist's name. As one may judge from the illustration, the plant may be an element of great beauty in the hands of a great landscape gardener.

THE CALIFORNIAN MAMMOTH TREE IN GREAT BRITAIN. — A correspondent of the London *Gardeners' Chronicle* notes that the late Marquis of Huntley, on his estates at Orton Longueville, between 1853 and 1860, planted some 300 trees of the *Sequoia gigantea* about his grounds. They are now from 60 to 80 feet high, and from 12 to 20 feet in circumference. Some of them have produced cones in great abundance for years past; others are more or less unproductive, a fact common to most species of forest trees in America. The gardener, Mr. A. Harding, has sown a few of the seeds at different times, but find few germinate.

This latter fact is also common to most coniferous trees in America, that are in a measure isolated. It is only when numerous trees are together in company, that seeds are "full," as the botanical term goes. This arises from the fact that the male flowers are perfected in advance of the females, and the latter fail to get pollinized. The "seeds" are found to be hollow in almost all the cones of any conifer grown in gardens. So far as the mammoth tree of California is concerned, the comparative scarcity of trees in the groves produces the same result as in garden plants. The larger proportion of native seed, collected in these days, are hollow. If the collector gets seed with 25 per cent. of sound seed, he thinks himself fortunate. As, however, the purchaser buys seeds by weight, the light seeds do not count largely in comparison with the heavier ones.

CATALPA BIGNONIOIDES. — In many of the treatises on the *Catalpa speciosa*, in relation to its value as a timber tree, which come before me, the species *bignonioides* is spoken of in a disparaging way. For instance, in one before me now, it is said, "This tree is of small growth, crooked and seldom forming a well-shaped tree," and further on, "this worthless variety." The writers have in mind the value of trees for timber purposes, and, in a general way, there is no objection to the terms they apply to *bignonioides*, comparing it with *speciosa*. *Speciosa* is undoubtly the one for timber purposes, but, when it comes to an ornamental tree, give me *bignonioides*. Its spreading, round-headed growth is of much beauty; and, when in flower, it displays its huge panicles to much better advantage than does the lofty-growing *speciosa*. It can hardly be called "of small growth," even with *speciosa* in mind. It is not as tall a tree, but there are many in this vicinity forty feet high and as many in width, and botanies say of its height, "fifty to sixty feet." It is a grand lawn tree, its large, tropical-looking leaves suggesting its history, viz., a native of the Gulf States, which has gradually crept north as far as southern New York. JOSEPH MEEHAN.

SELECTING STREET TREES.—It is not an easy matter to choose between a number of available trees for sidewalk planting, and at the same time make the selections to suit the immediate location. The writer recently witnessed a case with such difficulties attached, and, with a rather disinterested position, he could not but pity the confused parties.

A committee of three had been delegated by a church congregation to purchase suitable trees for the sidewalks bounding their city church property. The pleasing of a large body of people was in itself a difficult task. These men appreciated the value of a permanent tree, like the Pin Oak, and were willing to discard the rapid-growing, but short-lived Poplar and Silver Maple. Beside the value of permanency, the sturdy character of the Pin

Oak, its adaptability to city-street culture, and its ultimate great beauty in course of development, were recognized. The greatest objection seems to be in the comparison between the growth made by the younger trees of this oak and some upright, clean-branched tree like the Sugar Maple. The slightly pendulous habit of the Pin Oak's lower branches, so beautiful when the tree gains more height, detracted from its appearance as a street tree while young. But the necessary careful pruning remedies this largely and few will recognize an unsightly tree in a young, thrifty Pin Oak set and closely pruned.

The American White or the English Ash are pleasing trees, the appearance always being the same and the growth being fairly rapid. Few trees are better adapted for street planting. In the case cited, the soil where the trees were to go was a heavy clay. The Ash does not object to somewhat heavy soil; neither does the Pin Oak.

The Sugar and Norwegian Maples have their advocates, and in many respects they are very desirable. But in the clayey soil the growth might be slow and unsatisfactory.

Oriental Planes do well in such situations and make rapid growth; but some do not like the appearance of a somewhat old tree, which usually loses its symmetry and compactness.

One of the most approved methods is to plant half the required number of one slower-established, more permanent tree, such as the Pin Oak, and the remainder of a rapid-growing tree for early, temporary results. The Pin Oak and Oriental Planes are good examples for such use, being alternated in the rows. Set a little close—say 20 feet apart—the less desirable alternating; the others may be cut out as occasion demands.

FUNGUS AND PLANT DISEASES.—Every new discovery, of practical use to man, is liable to be taken up by people who know little of the subject and yet push it to extremes. In regard to the influence of fungus in the diseases of plants, nearly every abnormal structure is referred to fungus action. To such an absurd extent is this pushed that the mere practical man is pushed to the other extreme, and it becomes difficult to have him believe that it is worth caring for fungus attacks. He well believes that disease has a firm hold on a plant before the fungus attacks it. He looks, indeed, on the fungus as beneficial, as acting the scavenger to help nature clear away that for which she has no longer any use. Midway between these extremes lies the truth.

In many cases, the fungus can only thrive on tissues already diseased or dead,—on the other hand, the evidence is just as conclusive that many species of funguses fasten themselves to plants, just as the Mistletoe attaches itself to tree branches, and produce disease. This is especially true of that class known as ferment funguses, which, as they germinate and develop, produce an acid that is often very deadly, though generally of great service to man. In the human system, they seem to generate nitric acid, and this leads to blood-poisoning. Just what they generate in plants, does not seem to have been surmised—but the fact of fermentation is apparent to the senses. Take, for instance, the case of Fire-blight in the pear,—that occurrence by which huge branches of a pear-tree may have the leaves turn black in a few hours, as if stricken by lightning.

Indeed, in the early history of the disease, it was not infrequent to have electricity called in to account for the trouble. But electricity does not give out the smell of decay. The smell of decaying fruit is so strong from the blackened leaves that no one can doubt the fact of fermentation. Indeed, Prof. Burrill detected a special ferment fungus in the stricken branches, which he named *Bacillus amylovorus*, or the Starch-eater. But when we examine the blackened-leaved branch, and trace it down to where it is still green and sound, we find at that spot a fungus had viciously attacked the branch, killing the bark and wood, and had been acting for some time before the final trouble came, at length emitting a fermentative substance that went up with the circulating sap through the whole branch, and left its agent in the structure as the Starch-eater of Dr. Burrill. Nothing can be more convincing, after a close examination, that fungus is really the cause and not the effect of Fire-blight. The practical man can well afford to laugh at those extremists who see nothing but fungus in plant diseases,—but he must not ignore facts like these. On his recognition of them will depend much of his success.

NEW OR RARE PLANTS.

DAPHNE CNEORUM.—Considering the classical associations gathered around Daphne,—who was one of the virgins of Diana, and was reported by Ovid to have been turned into some beautiful flowering bush now bearing the name,—it is strange that those who are continually looking for English names referring to the ancient story have not dug up something that might be appropriate to our plant. But it continues everywhere as *Daphne Cneorum*, with no one objecting that it is a

DAPHNE CNEORUM.

hard name. The bright, rosy-pink heads of sweet flowers, on its about six inches of height, are so unique in appearance as always to attract attention. It grows naturally in rocky or stony places along the shores of the Mediterranean Sea, and must present, as a wild flower, a very unique appearance. In our flower gardens, it thrives best in soil that is rather open,—one might say one that is the opposite of heavy clay. Though regarded as a spring-blooming plant, it has a fashion of flowering at different times, during the whole season, till the full autumn period has arrived. Though perfectly hardy, it does not like the full blaze of the winter sun,—and thus does better when planted in partial shade, provided the ground is not dried out by the roots of large trees.

THE YELLOW WOOD: CLADRASTIS TINCTORIA.—It is strange that a flowering tree of such marked beauty as the Yellow Wood, *Cladrastis tinctoria*, or *Virgilia lutea*, as it has been erroneously called, remains so uncommon. Possibly the somewhat ungainly growth in youth is accountable for the lack of interest shown in it; and also that it does not seem to seed freely. Young plants in a nursery are invariably passed by as the intended purchaser looks for something pretty for a lawn specimen. But a ten or twenty-year old specimen has quite a different effect. Then one sees a fine, symmetrical, small tree of spreading habit, the ends of the branches almost pendulous, and the whole distinct in character. The leaves are pinnate, but broadly-rounded. In June, drooping racemes of white, pea-shaped flowers are produced in sufficient profusion to look neat and showy without an appearance of over-doing the decoration. These flowers harmonize with the light green leaves and general character, and are very pleasing.

Cladrastis tinctoria is a native of the United States, but is not widely distributed—another cause for its being but little known.

There is but one other species in cultivation, and that is better known as *Maackia Amurensis*. While distinct and rare, and, therefore, desirable in collections, it is not as choice as *C. tinctoria*.

While so near, it is well to recall that *Sophora Japonica* is closely related to our subject, and is also a much neglected plant. Flowering in August, it is not the rival of *Cladrastis* it might otherwise be. This late-flowering character is, of course, much in its favor. The tree itself forms a beautiful rounded outline.

RHUS OSBECKII.—It is unfortunate, perhaps, that nurserymen feel obliged to list *Rhus Osbeckii* in their catalogues among the well-known species of *Rhus* or sumach, for by so doing it is most frequently overlooked in a search for beautiful ornamental trees.

This Chinese tree is very distinct in general character from our native species, and should be better known. It attains a height of 10 or 12 feet, makes a heavy trunk and spreading top. The branches are well clothed with foliage, which at times colors prettily in autumn, though not equal to the colors of other species.

Flowering in August, or close of July, its desirability is increased, as but few plants flower then. These flowers are whitish, but have been described as unattractive; but produced, as they are, in large terminal panicles against a background of foliage, the effect is exceedingly good.

Some trees do not produce perfect flowers, and are consequently non-seed-bearing. This tends towards making it unplentiful in nurseries and rare in cultivation.

PINUS MANDSHURICA.—Many of the pines planted as lawn specimens are truly ornamental in their character of growth only while comparatively young—the lower branches lose their foliage and the neat, compact habit is lost. *Pinus Mandshurica* is not of this class, and may be considered a sadly neglected species.

Among a number of specimen pines recently observed, the one in question was by far the handsomest. The mixed coloring of the foliage first attracts and pleases the eye; one side of each leaf is dark green and the remainder is a clear, silvery-gray.

Those familiar with *Pinus Cembra* will recognize, in the abundance of foliage, some resemblance to *P. Mandshurica;* they are quite closely related. It is this compact habit, effected by the great amount of foliage, which renders the superiority over others for specimen planting.

Pines, generally, are well-fitted to stand in the bleakest positions, and are, therefore, very useful. Coming from high altitudes in Asia, *P. Mandshurica* is thoroughly hardy. A magnificent specimen stands near Horticultural Hall, Fairmount Park, Philadelphia, and is the picture of health and vigor.

THE HARDY FLOWER GARDEN.

HELIANTHUS RIGIDUS, "MISS MELLISH."—There are very few hardy herbaceous-plant-borders in which the sunflowers are well represented, yet *Helianthus rigidus*, var. "Miss Mellish," has sufficient merit to command a place in every collection. The flowers are a clear bright-yellow, from 3 to 4 inches across, with a chocolate-colored disc, borne on long, stiff stems, so that it is very suitable for cutting. It is a good, strong grower, attaining the height of 6 or 7 feet, and is at its best during August.

E. HEMMING.

AMARYLLIS HALLII.—On page 92 of your MONTHLY for last June, E. O. Orpet tells me that my *Amaryllis Hallii* is *Lycoris Squamigera*. It is not my intention to dispute the findings of any one in authority, having purchased many plants under erroneous names; but I can report that, in our most sheltered bed, we have four plants of *Lycoris Squamigera* growing thriftily; and, though set out in the fall of '96, all have refused to bloom until this season. About the first of August, in my absence from home, one of the *Lycoris* sent up a stalk which yielded four *white* blossoms. It is a great grief, to me, not to have seen the flower; but I did see the stalk, with the forming seed-pods, and cut it down with my own hands. The foliage of this *Lycoris* is quite different from the *Amaryllis Hallii*. It is a lighter, brighter green; it develops in a more formal way; and the leaves are entirely without the distinct keel found on the back of the *Hallii* leaf. Moreover, the flower-stalk was developed with the leaves, whereas, the *A. Hallii* loses all its foliage before the bloom-stalks show themselves. The flower is the usual *Amaryllis* shape, but has this peculiarity: at two-thirds of its length, there is a slight contraction in the tube, as if tied around with a string; and then the remaining length opens out rather flatly.

If it is really the right thing to do, we will change the *A. Hallii* label to *Lycoris Squamigera;* but what name shall be given to the four bulbs purchased for *Lycoris?* Suggestions will be gratefully received.

Crown Point, Ind. MRS. F. N. B.

[It must not be forgotten that, when a botanist decides that two supposed species are

synonymous, he often means that they are not distinct enough to be regarded as separate species, and not that they are exactly the same. The nurseryman or the garden-lover must keep them apart. The customer would never forgive the nurseryman who sent him the Sugar Maple for the Black Maple; or the florist who should send the Compass Plant, *Silphium connatum* for *S. perfoliatum*, though these are regarded as synonyms in botanical works. The conductors have not seen both the bulbs in question, but it seems evident from Mrs. F. N. B.'s account that, whatever botanists may regard them, it is safe to regard them as distinct—for the present at least. They have only *Amaryllis Hallii*.]

A ROCK GARDEN FOR FASTIDIOUS FLOWERS.

ROCK GARDENS.—Complaints are sometimes heard that this or that pretty wild flower will not grow in gardens. It is often said of the Teaberry, the Trailing Arbutus, and the Chimaphila, or Winter-green. But it is not that these innocent little things are obstinately opposed to a civilized life, but because some of the conditions they have been accustomed to have been denied to them. They require help against a burning sun, and not that they must have the umbrageous protection that trees in the woods afford. An ordinary rock garden is received, by these plants, as a full equivalent for the forest. If there are any judicious spots where such a garden can be established, it not only affords facilities for the growth of plants that would not otherwise succeed, but adds beauty to the landscape effects of the garden. The rock garden should be made the terminus of a little bluff of earth, or in some way brought in as if it were either a natural part of the garden ground; or, if its artificial character is to be boldly avowed, seem to be the continuation of a wall, or an incident in some building or other. The annexed scene, from *Gardening Illustrated*, gives a good hint as to what a tasteful rock garden should be. Even the Edelweiss would probably succeed in such a one.

FRUITS AND VEGETABLES.

GOOD CHERRIES FOR EATING.—It seems strange that more cherries are not raised for marketing—sweet cherries for the table. The writer rarely recalls a trip that he made to Europe, some years ago, without longing recollections of the luscious cherries so plentiful in the markets there. Throughout Germany and France, no market was without them, and neither was our little party for long at a time. By the pound, the fruit was handled in "cornucopias" of paper, and was dispensed to hosts of passers-by. Excuse for their rarity in market is sometimes offered that the robins get the profits, while the orchardist has the labor for his share. But blackbirds and thrushes are as troublesome in the Old World,—but the cherry-grower finds it pays to enclose the tree in sailor's netting during the fruit-ripening time.

CABBAGE IN WINTER.—Lovers of cabbage may have it served throughout the winter, if the heads be carefully stored. They are earthed-up, similar to turnips and apples, the heads downward. The roots should not be removed when this is done, as the food stored in them continues support to the heads. When the heads are taken up for use, the outer leaves will be found to have spoiled. Occasionally a worm gets among them. If carefully washed, the leaves are not seriously harmed.

PROTECTION FROM FROST.—Referring to orange trees in parts of our territory verging on the frost line, we noted, what practical gardeners well know, that preservation from bright light is a great protection from frost. In regard to orange-culture, building on this valuable experience, MEEHANS' MONTHLY has suggested that, if a light trellis could be erected over an orange orchard, it would be equal to a saving of five or six degrees of frost. Plants that suffer when the temperature about them is at 32°, or the freezing point, are uninjured when under a trellis with the glass at 27° or 28°. We have watched the Florida papers to note experiments in this line, but nothing has appeared. The annexed illustration is, however, something in the trellis line. It is part of an orange orchard owned by Mr. Ives, near Rockledge, Florida. It is so constructed as to receive benefit from fire, as logs of wood are piled up in places, ready for a cold wave.

ORANGE-TREE ARBOR.

We have never pressed our plan of a simple trellis as a full protection, because, though successful, it might be a question as to whether there was profit enough in orange-growing to warrant this frost-defying course; but, if there is a good margin in this Rockledge practice, the other is surely worth trial. About five acres of land are covered by Mr. Ives' arbor.

DWARF SECKEL PEAR TREES.—Fondness for the Seckel Pear amounts almost to a craving with some persons, yet denial is great because of the long time before trees reach bearing. The demand for this fruit is invariably beyond the supply; yet, when a tree does develop, and bear, it does so abundantly. It is important to know that dwarf pear trees bear quickly, and when setting out standards include a few dwarf. It reduces the waiting period.

FRUIT MODELS.—With the large number of fruits named and scattered over the country, it is almost impossible for any one to keep in memory the characteristics of each one,—and yet nurserymen everywhere continually have fruits sent them for name. A correspondent makes the good suggestion that if some one would take in hand the making of plaster casts, properly colored, of all the leading varieties of fruit, there would be sufficient demand for them to make the preparations profitable. There are few nurserymen, he believes, but would be glad to have on hand a dozen or so of the leading varieties of apples and pears, at least. He observes, further, that there is just as much need of these models of fruits as there is of a herbarium to a botanist.

PRUNING.—Probably one of the best tests as to a good knowledge of practical gardening lies in the manner in which the pruning-knife is handled, for the deplorable effects of a lack of this knowledge are seen everywhere. The chief success in fruit-culture comes from the knowledge and the practice of judicious pruning. One has but to look at an ordinary vine-

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INTENTIONAL SECOND EXPOSURE

yard, and the result of some good gardener's growth of grapes under glass, to see the wide difference between ignorance and knowledge. The good grape-grower under glass will use the pruning-knife so judiciously that the plants will be healthy and productive for a hundred years, bearing fruit as freely and as vigorously from near the roots as at the top of the vine. The grower on the garden trellis, or on the side of a barn or building, finds his vines no good at the end of a few years. The variety he pronounces no good, and he rushes after every new kind to correct the results of his own folly.

One may travel through the length and breadth of the land and not find a case of sound pruning, and, at the same time, notice the weakness and decay in orchards everywhere,—all due to ignorance of pruning. There will be seen many cases where the owners understood this much: that pruning was a necessary part of a good gardening education,—but not knowing anything of causes and results, they have rather hastened than arrested the destruction of their trees.

The Quality of Fruit from Irrigated Trees.—Does irrigation, such as many western State fruit growers are obliged to give, affect the quality of the fruit?

Theoretically treated, though unscientifically, the subject allows of discussion with something to be said both for and against the affirmative.

The greater part of all fruits, popularly termed such, is water. With the water are substances of a more or less palatable nature. Is there not probably a balance in the mixture between the water and the other ingredients, just as in mixing fruit syrups with soda water, the result might be "weak," if the water was in excessive proportion, or too "strong" of flavoring, if the proportions be reversed?

Will a tree take more water into its system than it requires? Perhaps no more than required for the proper support of the tree, but possibly more than the fruit needs to bring its flavor just right in the judgment of man.

The argument against irrigation has supporters with facts, apparently, in which they claim the quality of irrigated fruit, or fruit from irrigated States, is poor, compared with others, and the cause is simply attributed to the irrigation. But possibly this lack of quality is caused by some local condition of climate or soil. Perhaps the "flavoring" components are not as strong, or the quality is affected by the fruit being picked at improper periods. These are points which the scientific investigator along these lines may determine better than the speculative theorist.

Pear Blight.—One of the misfortunes of discussions is an indefiniteness in the use of terms. The *California Fruit Grower* has a page to note that "Pear Blight" has appeared on the Pacific coast, and that its cause is not yet understood. What is described under the term "Pear Blight" is evidently what was first described and named by Downing as "Frozen Sap Blight,"—but, as the article goes on, the great enemy of the eastern pear-grower —"fire blight"—is evidently mixed up with it.

There is no longer any mystery, as to what is "fire blight," among practical men, though the microscopist does not seem to have caught hold of it. An extremely violent parasitic fungus, that has not been apparently examined by the mycologist, seizes on a point on a branch, and, in the course of a few days, utterly destroys both wood and bark over a space of several inches. Active fermentation ensues, and to such an extent that the strong fermentative odor is readily perceived. This fermentation is carried through the whole portion of the branch above the point of attack with the ascending sap,—and the whole branch putrifies in a few hours. Microscopists have examined the sap in these putrescent branches and leaves, and find a bacterium which they have named *Bacillus amelliorus*, without evidently perceiving the source of the putrescence in the fungus operating at the base. The main point of this paragraph is, however, to urge a more careful use of terms.

Transformed Pears.—Last year, Susanna M. Gaskill, of Swarthmore, Pa., sent to the Monthly samples of Seckel Pears, that had assumed the sunken stems and general appearance of apples. This year, the fruit presents its normal form as a well-behaved pear,—only two specimens of the apple-like wanderers being found on the whole tree. Grafts from trees that "sport" in this way produce permanent varieties; but the original tree, or branches left on the original trees, are apt to revert if left on their original roots.

BIOGRAPHY AND LITERATURE.

DEATH AND THE HELIOTROPE.

The Heliotrope is withered now,
Her godlike sun has set;
But though death's garlands bind her brow,
His eyes with tears are wet.

He weeps, he weeps to take the prize
That love alone has won;
Though on her bier the maiden lies,
Her soul is with the sun.

O Death! the victory is not thine,
When life for love we give,—
And long as yon bright sun shall shine,
The Heliotrope will live.

Will live in other hearts to bloom,
For love can never die,
But sheds on earth its sweet perfume,
Eternal as the sky.

Mary Bayard Clarke.

Citizens' Privileges in Germany.—To the article on city taxes, in your August Monthly, I add, from personal experience in Germany, that the salaries of the municipal officers are mostly paid from the income the forests bring by their practical management. There forests are so many centuries in existence, and partly by continuous renewal of the same in planting and sowing new woodlands. Yes, in my native city, I knew that every citizen residing there and owning a house was entitled to a cord of best wood (beech, generally) for firewood for the small cost of what the woodchoppers received; and there are several other privileges attached to the honor of being a citizen. Every four years a certain amount of coarse rush (*schilf-rohn*, in German) which grows on the borders of lakes and rivers, is also received by a citizen belonging to one of the eight districts, between whom the rush is equally distributed. It is used for the thatching of barns and country houses. Another common privilege is the hay which grows in a large meadow several miles away from the place, but which is measured out in lots, so much belonging to each house owner. There, citizenship is made remunerative in many ways.

Hartford, Conn. Mrs. Wilhelmina Seliger.

Fruit Harvesting, Storing, Marketing.—By F. A. Waugh, New York. Published by the Orange Judd Company. Fruit-culture for profit requires good business ability. One with a good knowledge of fruit-raising, and under the very best conditions for successful fruit-culture, may fail utterly,—while the poor grower with business tact will make money rapidly. Books on orcharding seldom take notice of this fact. The one who can tell what best to do with fruit after it is raised, deserves well of his countrymen. This little book is in a useful direction. It takes up this practical side. It advises how to study the markets, to prepare properly for market,—and deals with many such matters, very suggestive to those who are growing for profit.

William T. Harding.—When the history of American gardening comes to be written, and names are presented to us of those intelligent gardeners who have borne the labors of the day in advancing it to the present honorable stage, few will command more grateful respect than Wm. T. Harding, at this time resting from his labors at Mt. Holly, N. J., though still working in the interest of art and science, as the fingers of advancing years permit him. He was a well-known contributor to the *Gardeners' Monthly* during the thirty years of its continuance. A contribution from Mr. Harding, treated with the broad intelligence of a popular magazine writer, and yet marked by the practical judgment of a successful worker in gardening, was always looked forward to with impatience, and read by all with profit and pleasure, as a master in landscape gardening, Gordon Park, at Cleveland, testifies; while, for a considerable time, he held the position of landscape gardener to Fairmount Park, in Philadelphia.

He was born at Burton under Needwood, county of Stafford, England, February 13, 1824. His father was a retired naval surgeon, who, like so many of his class in the Old World, was an enthusiastic lover of botany,

and who was able to communicate an enthusiastic love for the amiable science to his son. This developed into a love of nature in all her charms, and led him into the practical work of gardening. The deep love for flowers led him

WM. T. HARDING.

to Australia, and the many incidents of travel, in that far-away land, before his settlement in America, gave pleasure and profit to hundreds who enjoyed his admirable pictures of that country.

FORESTRY.—The Hon. J. D. Lyman, of Exeter, New Hampshire, has an admirable paper on forestry in the report, for 1900, of the Rhode Island State Board of Agriculture. He starts with the sound definition of forestry, that it is the science and art of growing trees as a crop. As usually understood by those who employ the term in these days, it should be a branch of meteorology.

In this essay, Mr. L. shows that, properly planted, pruned, and cared for as a farm crop should be cared for in intelligent hands, the returns are as profitable as any other crop, to say the least. This has always been the view of the writer of this paragraph. The long period between seedtime and harvest is the chief difficulty in the way, but corporations can overcome this as they can overcome the non-paying dividends of R. R. companies for some years. As for forest fires, there would be none in a well-ordered tree plantation—at least, no more loss than could be as easily covered by insurance as any other property. So far as we know, there have been no attempts at forestry worthy of the name, in America. There have been plantations, and by companies that were practically left to themselves, after being fairly started, with about as much chance for success as a crop of corn or potatoes would have under like conditions.

ANCIENT HISTORY OF THE ROSE.—That the rose was known to the Israelites, and is mentioned in the Old Testament, there can be little doubt. It was probably known to them by the preëminent title *chabalzeleth*, for, although that may have been the general name for a flower, yet, like the Persian *gul*, it may have been applied to the rose as *the* flower—the superlative of the floral world. *Rosa spinosissima* and another species is a native of Palestine; but, as we have no description of the flower in the Old Testament, whether these or some other flower is intended, remains quite uncertain, though some flowers mentioned in its pages are translated into "rose" in our authorized version.

When we descend to later ages, when decriptions of the flower were given, we cannot but be struck by the almost unvarying name of the flower. In Greek it is *Rhodon;* in German, *Rose;* in Dutch, *Roos;* in Danish, *Rose;* in Swedish, *Ros;* in French, *Rose;* in Italian, *Rosa;* in Spanish, *Rosal;* in Portuguese, *Roseira;* in Russian, *Rosa;* in Polish, *Roza;* in Bohemian, *Ruze;* in Sclavonic, *Ruxiza;* in Finnish, *Ruusu;* in Welch, *Rhos;* in Anglo-Saxon, *Rose;* and in Gaelic, *Ros.* Everyone of these seems to be derived from a root-word signifying red or ruddy.

The rose is mentioned by Homer and by Anacreon; by the former in the hymn to Ceres, by the latter in many of his odes, through which we learn that it was a flower remarkable for the beauty of its petals, that it grew amidst thorns, that it had a divine fragrance, was of the color of the human complexion, that it was the most beautiful of all flowers, "the queen of flowers," the "flower of love."—*London Journal of Horticulture.*

CYSTOPTERIS BULBIFERA

Fulcher Meehan's Monthly by J. Pringle & Co.

COLOR PLATE

CYSTOPTERIS BULBIFERA.

BLADDER FERN.

NATURAL ORDER, FILICES.

CYSTOPTERIS BULBIFERA, Bernhardi.—Frond lanceolate, elongated (one to two feet long), two-pinnate; the pinnæ lanceolate-oblong, pointed, horizontal (one to two inches long), the rachis and pinnæ often bearing bulblets underneath, wingless; pinnules crowded, oblong, obtuse, toothed, or pinnatifid; indusium short, truncate on the free side. (Gray's *Manual of the Botany of the Northern United States.* See, also, Chapman's *Flora of the Southern United States;* Wood's *Class-book of Botany*, as *Cistopteris bulbifera*; and Britton & Brown's *Illustrated Flora of the Northern States and Canada.*)

This delicately beautiful fern is one of the oldest American species known to botanists. It was figured by Jacob Cornuti in a work describing the plants of Canada, published in Paris, in 1635. It is a very good figure, and has been reproduced by Barraleius, and other succeeding authors, as *Filix Bulbifera Cornuti.* He describes it as a fern without flowers, but with fruit, and believes it should be classed with *Polypodium.* This was also Linnæus' view, and it appears in his works as *Polypodium bulbiferum.* The *Polypodium* of Linnæus soon became a vast genus, and, for convenience in botanical studies, had to be divided, and we find it referred, by Michaux, to *Nephrodium*, describing it, in 1803, as *N. bulbiferum*, but remarking that it had the appearance of *Polypodium Filix-Mas.* Pursh, in 1814, published it as *Aspidium bulbiferum.* Pursh followed the *Hortus Kewensis* of Aiton considerably,—and evidently in this case, as it is referred to in that work, published a year previous, as "*Aspidium bulbiferum* of Willdenow, introduced by Mr. John Tradescant, Jr., from Canada, in 1638," three years after its notice by Cornuti. He places it in alliance with *Aspidium Filix-fœmina.* Indeed, as Dr. J. Wilde, who wrote of the ferns of Siberia and Northern Asia in 1867, remarks: "It has been referred to as *Woodsia*, *Aspidium*, and *Asplenium* by various botanists." It was left to John Jacob Bernhardi, a botanist of Erfurt, to show that a separate genus might be made of some of the species by reason of the peculiar bladdery features in the indusium. He gave the name of *Cystopteris* to this group,—the name literally signifying bladder fern. This was published in a small local work, in duodecimo size, in 1806, as Schrader's new series of the *Journal of Botany.* The author endeavors in these chapters to verify facts by reference to the original authors, but has not been able to examine the new series of the little work in which the genus was first described. Judging, however, by a reference to it in Swartz's *Synopsis Filicum*, issued the same year, the original orthography may have been *Cistopteris*, though Swartz himself retains the name of *Polypodium bulbiferum.*

In describing the genus, botanists lay stress on the roundish fruit dots, "borne on the back of a straight fork of the free veins," to quote the words of Dr. Asa Gray. The author of this paper has found considerable variation in this fern. It sometimes approaches *C. fragilis* so closely that by some barren fronds of the latter he was almost of the belief that he had found the *C. bulbifera* in Alaska. In our enlarged drawing, it will be seen that the sori or fruit dots are sessile in the forks of the veins, and different from the figures in Dr. Gray's work quoted, as well as in Britton & Brown's "Illustrated Flora." This does not indicate that these figures are erroneous, but that a veinlet in their specimens had not been developed. The fact is, however, of great importance to those studying the morphology of ferns. It is assumed that the fruit dots are the termini of veins. To bear them on the back of a free vein would be an anomaly unexplainable by any morphological law. Borne, as in our picture, they may still be on terminals of undeveloped veins. In the supposed anomalous cases, it is to be conceived

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COLOR PLATE
INTENTIONAL SECOND EXPOSURE

that the subtending veinlet has remained wholly undeveloped. It simply illustrates the power of variation in the species.

An interesting circumstance in its history is the comparatively limited area in which the plant is found. The late John H. Redfield, in a letter to the author, dated December 28, 1877, says of it: "*Cystopteris bulbifera* is one of the strictly North American species. I have found no evidence of its existence west of the Missouri River, and its province forms a triangle, of which Newfoundland is the northeast angle, the sources of the Mississippi the northwest angle, and northern Alabama and Georgia the south. Walter would call the genus *Cystea*,—claiming it to be the older name,—but such changes are inconvenient. It is remarkable that, on the American continent, *Aspidium cristatum* seems to occupy about the same ground with *Cystopteris bulbifera*, except that the northwest angle of its province extends as far as Great Slave Lake. Moreover, it also inhabits northern Europe." In modern times, following the belief that new species have continuously appeared on the earth by a change of character in response to a struggle for life and a survival of the fittest, a new branch of botany has been attempted under the name of ecology. This is an endeavor to ascertain what the conditions were that induced the change. The history of our plant will be welcome to the students in this department. We find the closely related *Cystopteris fragilis* invading a great territory that must have taken vast periods of time to travel over, supposing it had an original home centre. For all the varying conditions surrounding it in this great province, no material change of character has been necessary to enable it to hold the field it has conquered. We may assume that it has been under ages innumerable in the condition we find it to-day. The closely-related and much-resembling *Cystopteris bulbifera* is confined to such a very limited area that we may fairly assume that its history is comparatively modern. If it be conceded that, under some law of ecology, it changed from an earlier species, the conditions that led to the change should be apparent. If its parent were *Cystopteris fragilis*, as the older species, there should be much interest in the fact that both are still growing together, and each apparently well fitted to its surroundings. Both seem most at home when growing in moist places under the shade of overhanging rocks. At times it is thinly scattered over the territory it occupies, as, for instance, along the Wissahickon, near Philadelphia. In the *Botanical Gazette* for 1875, a great lover of ferns, Mr. A. H. Young, of Hanover, Ind., notes that, in that section, "It is abundant in all the woods and about all the moist rocks. It appears in fruit in early summer, and keeps its beauty late into the fall." Williamson, in his delightful treatise on the ferns of Kentucky, says of it: "The plant has the same general appearance as the *Cystopteris fragilis*, with much longer, lanceolate fronds, often two feet in length, with lance-oblong pinnæ. The stem is so frail and delicate that it seldom supports the plant in an upright position, but allows it to bend over on rocks or the surrounding vegetation. It is not so common in Kentucky as the preceding species; but it is found in numerous localities, on the cliffs of the Kentucky River, and notably at Rock Springs, in Oldham County, where it grows in moist situations in greatest luxuriance. It is a very tender fern, withering at the first touch of frost, and difficult to cultivate."

Our plant has found no place in polite literature that is not common to all. Howard Worcester Gilbert describes a scene wherein

"——An oak grew near—
Its fretted roots
Embossed the bank, and on their ruffled bark
Grew plants which love the moisture and the shade,—
Short ferns and longer leaves of wrinkled green."

—And our fern might have been one of the elements in the make-up of the pretty picture. Writers on emblematic flowers have dedicated the fern to "fascination,"—but little has been made of the idea in a positive form. It may be there has been some uncanny legend connected with it in a fascinative sort of way, as Mr. Field reports they are known in some parts of England as "devil bushes,"—but this would hardly apply to species allied to the associates of this innocent-looking species.

EXPLANATION OF THE PLATE:—1. A complete plant, with root-stock, frond and bulblet, from damp rocks along the Wissahickon, near Philadelphia. 2. Bulblets. 3. Pinnule magnified, showing the presence of secondary veinlets. 4. Magnified pinnule, showing the sori enclosed by the bladdery indusium seated in the axil of the secondary veins.

WILD FLOWERS AND NATURE.

LOVELY MOON.

How lovely is the landscape! Morning peeps
Behind yon leafy mountain, and her eye
Looks over a fresh, green world that calmly sleeps
In the sweet cradle of its infancy;
And, clustering 'round the rocky summits, fly
Light mists, now painted in the rich array
Of Heaven's majestic spectrum, which on high
Spans the dark tempest, as it steals away,
And westward glows in pomp the golden eye of day.

PERCIVAL.

THE FRAGRANCE OF FLOWERS.—A little child, just four years old, seeing a Japanese lily in my hand, said: "It smells like candy, where is the sweet?" Sure enough,—where is the sweetness of flowers? Mrs. Somerville, in her "Molecular and Microscopic Science," published in 1869, says: "Sugar is almost as universal a constituent of the higher classes of plants as cellulose and starch, etc." Does the sugar give the sweet odor?

Chambers' Encyclopædia says: "The nature of odorous emanations is so little known that it is impossible to give a definite account of the mode in which they produce sensory impressions." Must, then, the query of a little child remain unanswered, or can Prof. Meehan enlighten us? He has certainly much communion with Nature, and she may have divulged the secret to him and not to another.

The foregoing was written some time ago, but I send it notwithstanding the Senior Editor's note appended to "Nectar of flowers according to the soil," namely, that "the odors of flowers are in the main derived from the nectar secretions. . . And the odors of flowers vary with the different periods of the day."

San Diego, MRS. E. E. ORCUTT.

DEVELOPMENT OF FERNS FROM BULBLETS. CYSTOPTERIS.—The subject of *Cystopteris bulbifera*, which is used as the leading article with the colored plate in this number, is capable of enlargement in many interesting ways. The ability to form bulblets is a striking feature of the species, though other ferns have a viviparous habit. Indeed, it is believed that many fern plants originate from microscopic bulblets that appear on the prothallus,—as the small membrane that characterizes the original spore-germination is called. What is known as the seed in flowering plants occurs after fertilization. In ferns, the spore is little more than a bud. It unfolds when the condition favors, and becomes a thin, green blade, on the surface of which appear small vesicles, some representing the pollen cases, and some the pistils of flowering plants. At maturity, the pollen, as one may term it, is ejected and falls into the archegonia, thus securing fertilization. It is on this membrane that little bulblets, at times, are formed, and the plant succession secured without sexual arrangement, just as in the case of the frond-bulblets that give the name to our species. In many instances, the plants do not produce them; and in others, only a very few are found.

EVERGREEN FERNS.—It is at this season the beauty of the evergreen ferns is best appreciated. Not a particle of green gives way to a fall or winter shade, and the fronds remain fresh and bright through all the snows of winter. The writer has frequently enjoyed the Christmas Fern, *Aspidium acrostichoides*, under such conditions. It is plentiful along the rocky banks of the Wissahickon Creek, Fairmount Park Philadelphia. *Aspidium marginale* is a good evergreen, but the green color is not so shining.

NARROW-LEAVED MOUNTAIN LAUREL.—The broad leaf of the Mountain Laurel is so well known from its use for festooning at the Christmas holidays it has become well fixed in the public mind, and the narrow-leaved species is but little known. The latter is *Kalmia angustifolia*. It differs in flower as well; they are smaller and darker in color, while more abundant.

GENERAL GARDENING.

THE HUSBANDMAN.

Buoyed up by every hope that animates
The human breast, he stands erect and firm,
Amidst the fertile empire of his fields.

Behold him as he treads the loamy soil,
With independence such as kings might crave;
The dawn to sound his reveille;
The dusk to bring him peaceful rest;
His only lords the changing seasons as they
come and go. MARKHAM.

A QUESTION TO THE READERS.—What flowering plant or plants have you found best suited to ordinary house-culture? Your suggestions and experience briefly told will be helpful to many.

What foliage plants succeed best in your hands indoors?

SUCCESSFUL PLANT-CULTURE IN WINDOWS.—Why is it that some persons have no success whatever in raising plants in the dwelling, while others keep their windows well filled with beautiful plants, robust and thrifty, flowering profusely and evidently very much "at home"?

This is a question often asked, and frequently with envious feelings, by those who love flowers but have not been very successful with them. The wise reply is usually evasive. What answer can be given other than in a general way? Some will say, "You give them too much care; you annoy them so they cannot grow and give results. My plants are much-abused and shamefully neglected, at times, and yet they are looking well and happy."

Plants must be treated as individuals; no two can be handled in exactly the same manner. A physician in charge of a hospital would not give the same manner of attention to each patient; neither would he give one examination to a case and then give an unvarying prescription for all time. He has, first of all, a fundamental knowledge of treatments that may be given certain cases; then, when he treats the individual, the needs are made a study and continued observation from day to day. There is no occasion for annoyance or hindrance in this daily oversight and attention—rather, it is intelligent care that leads to better conditions, and, to a degree, less dependence on some one.

In like manner, we must first know the probable needs of our plants—then give regular care and exercise judgment in maintaining certain treatment or suspending it for something better suited to the immediate requirements.

The condition of the soil in the pots is of first importance. Plants of a succulent nature or with fleshy roots will usually object to real heavy soil; others may find unsuited conditions in an extremely light, porous soil. Where doubt enters the mind, be safe and adopt a medium grade of soil—loamy and porous.

Naturally, heavy soil is slow to take up moisture as well as slow in yielding it. Water poured on the surface of such finds slow entrance and slow passage—the soil in the bottom of a pot will rarely get any moisture, though mostly needed there, unless it be given by standing it for a few moments in a saucer of water. Such soil becomes sodden and sour, and will likely be over-watered in the upper part.

The extreme of this state,—light, sandy soil,—of course takes water at once, and it almost as quickly passes off. In a warm room, the moisture will evaporate so quickly as to require watering twice a day, and each time a thorough soaking.

Medium-light soil is seen to be the safest. Let it be just so that the water will enter at once and dampen the soil throughout the pot without running off.

Plants in jardinieres sometimes suffer by having water standing in the latter—they are literally drowned. On the other hand, if the plant is growing—especially rapid growth—or flowering, an abundance of water is required, and what would ordinarily be an over-supply is then of great benefit.

Light and air are of very great importance; plants should have both every day. Of course, it is to be supposed they are all placed where light will be had abundantly each day; but this light must be distributed equitably. This is accomplished by turning the plants around, exposing them to the light on all sides.

Some plants require more heat than others—especially when growing and receiving considerable water. Plants practically dormant may be kept cool and without much water and light.

But few persons realize what a small amount of soil is made to support a plant, and how inadequate the nourishment must frequently be. Food of some kind should be occasionally added to the soil. Manure in liquid form will aid strong growth—a few drops of household ammonia frequently added to water is a good practice. Potash, present in wood ashes or bone meal, will sometimes be acceptable.

WEEPING BEECH.

So-called plant-foods are now largely manufactured for convenient use, but that they are better than the above-mentioned forms is open for decision.

Plants in a very hot room sometimes suffer from a dry atmosphere, and the leaves should be lightly syringed occasionally.

Dead or dying leaves on a plant are useless encumbrances, and should be removed and destroyed as soon as they appear. While often these are simply the natural fall and end of the leaf's functions, as a rule it indicates some irregular condition, as too low temperature, too little light or air, or improper watering.

These are the main things to be borne in mind and the conditions supplied carefully. When experience enables one to see conditions quickly and to foresee results, watchfulness and care are less required, and the stage of apparent carelessness attributed by the quotation in the early paragraphs of this article is reached.

WEEPING BEECH.—In MEEHANS' MONTHLY for October, 1901, a large, old, specimen Weeping Beech was illustrated. To show the plant in a younger stage and a more common form, we herewith illustrate a specimen on the lawn of the late Thomas C. Price, Chestnut Hill, Philadelphia. As we look upon the angular yet fine, rugged form, it is likely to cause wonder why any tree should take on such a peculiar form. Aside from any possible physical reason, nature teaches that we must have variety, or life would be an endless monotony. And any singular growth may be looked upon as part of Nature's plan to avoid such monotony and to reveal the fact that everything has its use on the earth. The Weeping Beech, odd though it is, is highly valued for special landscape uses, and in this light is to be greatly admired.

ARRANGEMENT OF PLANTS IN CONSERVATORIES.—When arranging a miscellaneous collection of plants in a conservatory, one is confronted with problems not easily overcome, and the greatest of these is to arrange the plants so that those requiring greater heat than others may obtain it without detriment

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Light and air are of very great importance; plants should have both every day. Of course, it is to be supposed they are all placed where light will be had abundantly each day; but this light must be distributed equitably. This is accomplished by turning the plants around, exposing them to the light on all sides.

Some plants require more heat than others—especially when growing and receiving considerable water. Plants practically dormant may be kept cool and without much water and light.

But few persons realize what a small amount of soil is made to support a plant, and how inadequate the nourishment must frequently be. Food of some kind should be occasionally added to the soil. Manure in liquid form will aid strong growth—a few drops of household ammonia frequently added to water is a good practice. Potash, present in wood ashes or bone meal, will sometimes be acceptable.

So-called plant-foods are now largely manufactured for convenient use, but that they are better than the above-mentioned forms is open for decision.

WEEPING BEECH.

Plants in a very hot room sometimes suffer from a dry atmosphere, and the leaves should be lightly syringed occasionally.

Dead or dying leaves on a plant are useless encumbrances, and should be removed and destroyed as soon as they appear. While often these are simply the natural fall and end of the leaf's functions, as a rule it indicates some irregular condition, as too low temperature, too little light or air, or improper watering.

These are the main things to be borne in mind and the conditions supplied carefully. When experience enables one to see conditions quickly and to foresee results, watchfulness and care are less required, and the stage of apparent carelessness attributed by the quotation in the early paragraphs of this article is reached.

WEEPING BEECH.—In MEEHANS' MONTHLY for October, 1901, a large, old, specimen Weeping Beech was illustrated. To show the plant in a younger stage and a more common form, we herewith illustrate a specimen on the lawn of the late Thomas C. Price, Chestnut Hill, Philadelphia. As we look upon the angular yet fine, rugged form, it is likely to cause wonder why any tree should take on such a peculiar form. Aside from any possible physical reason, nature teaches that we must have variety, or life would be an endless monotony. And any singular growth may be looked upon as part of Nature's plan to avoid such monotony and to reveal the fact that everything has its use on the earth. The Weeping Beech, odd though it is, is highly valued for special landscape uses, and in this light is to be greatly admired.

ARRANGEMENT OF PLANTS IN CONSERVATORIES.—When arranging a miscellaneous collection of plants in a conservatory, one is confronted with problems not easily overcome, and the greatest of these is to arrange the plants so that those requiring greater heat than others may obtain it without detriment

INTENTIONAL SECOND EXPOSURE

to others having quite opposite preference; or where copious watering may be given to some, and others kept somewhat dry.

The possessor of a "range" of glass can devote certain houses to plants having similar requirements; but the "one-house" owner must needs exercise considerable judgment and ingenuity to overcome the difficulties that confront him.

By careful testing, with aid of several thermometers, it will be found that certain positions in the conservatory will vary a little in the degree of heat—perhaps just sufficient to meet the requirements of some particular plants. If there are certain places reached by the sun for a longer period during the day, or where the glass is least exposed to strong winds, warmth-loving plants will be best suited.

Shade-loving plants may often be located where the spreading leaves of a large palm or other plant will give shelter from the sun's rays.

Cacti and some related succulents are usually kept very cool and almost dry in winter, and allowed to put all their energies into growth during the summer. This is, however, often inconvenient, and they are permitted to grow the year round. In any event, they should have a limited supply of water, and it may not be wise to let them have a constant watering with the other plants. For this reason, as well as for a harmonious appearance, keep them somewhat apart from the others. They will form an interesting group. Interest in a group of cacti is enhanced, by the way, by a good variety in forms. The "Old-man" Cereus, the Rat-tail and Crab-cacti, the triangular-stemmed and night-blooming Cereus, species of *Mammillaria* and globular forms with gaily-colored and long, curved spines, all make good selections and differ widely. *Euphorbia splendens* should not be omitted.

Begonias, with their leaves in many forms and markings, look well grouped near each other, and will be glad of a little special attention the separation will afford.

Large tubs and pots may be concealed from general view by smaller pots placed before them; or the pretty Selaginellas may be allowed to spread around them and make pretty covers of green.

Do not put palms in corners where you cannot examine their leaves carefully and frequently. Attacks from scale will be rebuffed by watchful attention.

Air-plants like to be where they will receive the full benefit of a moist atmosphere.

The details of arrangement must be left to the one who has the actual arranging of a house. His artistic skill must be brought into play, when he will make the general appearances as informal as possible and permanent-looking.

Scale on Palms.—It is not advisable to delay cleaning scales from palms. They are insignificant-looking creatures, and it is an easy matter to be unmindful of the damage to a plant they can do in a small space of time. The nature of a scale is not known to every one. It is an insect covered by a scale protection, and it feeds on the juices of the plant to which it attaches. As its work continues, the vitality of the plant is quickly sapped before one is well aware of it. The increase of these insects is enormous, each female producing hundreds and thousands in a year. Therefore, be watchful and prompt in checking its progress. It is much better to spend a few hours cleaning away a few scales from a healthy plant every few days than to spend a whole day on a sickly plant once a month.

Simplicity in Table Decorations.—Elaborate and expensive floral centrepieces are not necessarily the most beautiful. Simplicity often rules the worlds of art and nature. Who would consider as beautiful, at first thought, a few sprays of the leafy growth of the garden Asparagus together in a small vase with a like number of golden Coreopsis? The effect is charming if the vase also be simple. This should be remembered, that a vase of flowers is intended to display the beauty of the flowers and not man's handiwork in molding or coloring the vase.

The umbels of white flowers of the wild carrot are very pretty in vase decorations, yet how few persons would think of gathering them for that purpose!

While it is a benefaction to man to have at command, for use and proper enjoyment, all the beautiful things possible, it is foolishness to trample aside a host of pleasing things,

merely to strive for the elusive and unattainable or imaginary beauties. The writer does not lack praise for rare beauties, but rather deplores the tendency to look over and beyond Nature's abundance in the fields and along waysides.

Did you never pull a flower of the wild carrot? The tenacious fibre of the stem requires a pull. Never smell of its peculiar fragrance—if fragrance it may be termed? Note the odd, concave form of the umbel,—like a good-sized butter-plate.

There is much in Nature for us to learn and appreciate, and in our observations we come to know her better, we learn to love her, and that feeling will embrace our fellow-men. Let us, then, bring her simplest charms to our hearts and homes, without fear of missing something more rare and more beautiful beyond.

Lopping City Trees.—It has been supposed that only American cities present painful exhibitions of decapitated trees; but the London *Journal of Horticulture* says: "The extent to which large trees, such as limes, Acacias, poplars, are lopped and cut in the winter time until they appear like contorted broom-sticks attached to a growing trunk or stem, is a matter of great regret. Fancy an avenue of such trees, three or four, perhaps, before each villa residence in a fashionable thoroughfare, and also in private gardens. Lime trees seem to be badly used in this respect. Why should trees be planted thickly in a town street and every one unmercifully pruned back each winter, leaving six or eight twisted stems with gnarled and knotty excrescences upon them, caused by the constant pruning to one point?"

After all, there is something to be said on both sides of this question. The linden, locust and poplar—the kinds noted in this paragraph—grow too large for sidewalks, as do the Silver Maples, poplars and planes in American cities. But a beautiful tree is not always the object of the planter. The building operator desires something that will soon make his property valuable,—and the individual owner desires rapid shade. In time, the rapid grower has grown too tall, and there is nothing left to do but to cut it back. We may tell the owner that these beheaded trees look ugly,—that cutting back of large limbs, as he cuts, leads to a rotten, hollow tree in a short time, and he may as well cut it away at once and plant a new one: but he acts on the idea that he must consult the living present and let the future take care of itself. There are numerous broad-headed trees—of the horse-chestnut type, for instance—that few would ever think of lopping. If only city street planters could be brought to believe that these somewhat slower-growing trees were preferable to the more rapid growers, we should hear very little about the barbarous practices of the tree-butchers.

Rooting an Oleander Twig.—It will be found an interesting thing, at least, to root an oleander in a bottle or glass of water. Simply take a short twig, such as a flowering shoot that may have been broken, and put it in fresh water. The stem should be smoothly cut—not broken. Add water to the bottle as it evaporates, and it will soon commence to issue roots. When these are about three-fourths of an inch long, the slips may be planted in a pot.

The oleander makes a strong growth in the house, and requires quite a little water.

Oxalis Bulbs.—The various *Oxalis* are nice plants of easy culture in pots. They occupy but little room, and they bloom freely. There are pink, white and yellow-flowered kinds; some have larger flowers than others, but all are pretty and pleasing. It is best to put several in one pot, as the bulbs are quite small. The native *Oxalis violacea* has a pretty little pink flower, and can be cultivated: *Oxalis acetosella* is known by many as the Shamrock of Ireland.

NEW OR RARE PLANTS.

Pinus Mandshurica.—The illustration on next page of *Pinus Mandshurica* shows the beautiful, compact form described in Meehans' Monthly for November. Unfortunately, the beautiful silver and green colors of the foliage cannot be reproduced. This specimen is situated in the evergreen group near Horticultural Hall, Fairmount Park, Philadelphia, where a number of beautiful specimens of many kinds may be seen. Other fine, rare specimens are a golden pine, *Picea nobilis glauca*, Sargent's Weeping Hemlock and *Pinus cembra*.

THE HARDY FLOWER GARDEN.

HARDY POMPON CHRYSANTHEMUMS.—Since the craze for the very large chrysanthemums is gradually dying out, more attention is being paid to the other sections of this beautiful family of flowering plants, such as the quilled, anemone-flowered and pompons. The last-mentioned are invaluable for the hardy borders, flowering as they do so late in the fall, when all other plants are retiring for the winter, with perhaps the exception of *Aster Tataricus*, *Helianthus Maximiliani* and a few stray blooms that have lingered beyond their time. The coloring of these autumn beauties has a peculiar fitness for the time of year; the bright yellows, bronzes, reds, dull pinks, and white blend beautifully with the autumn leaves, and give the hardy flower garden a charm that no lover of nature can afford to miss, lasting, as they do, in a favorable fall, right through the Indian summer.

PINUS MANDSHURICA. (SEE PAGE 183.)

Besides, being hardy, there are few plants that will thrive with less attention. They seem very indifferent to location, growing very readily in almost any garden soil, and are almost exempt from fungus diseases and other garden pests, with perhaps the exception of black and green aphis on the young shoots. These can be destroyed by an occasional syringing with tobacco water, applied about the strength of weak coffee.

They increase very readily by division or cuttings in spring; but being such a late flowering plant, are apt to be overlooked in the spring rush.

Plants grown from cuttings are much more thrifty than those by division, and, if struck in April or May, make good-sized plants by the fall, producing a wealth of bloom. E. H.

ROSE SOLEIL D'OR (GOLDEN SUN).—Messrs. John Charlton & Sons are prominent in the dissemination of this new French rose, which is described as especially hardy. The flowers are of an orange-yellow, tinted at the apex with lavender-pink. Though the list of roses is large, this promises to be a popular addition. It has been awarded medals of honor in many parts of the continent of Europe.

LIATRIS SCARIOSA.—All species of *Liatris* are attractive, more or less, and are much sought by planters. *L. pycnostachya* seems most in favor; but *L. scariosa* is perhaps more deserving. The spikes are as long as the former, and the flower-heads are larger, being the size of medium-large buttons. The concentrated color in the larger heads gives a more brilliant appearance.

Unfortunately, *Liatris* are quite subject to disease in some sections, making them somewhat unsatisfactory after a few years.

FRUITS AND VEGETABLES.

PEACHES IN CONNECTICUT.—The peach crop is reported as having been the most successful ever experienced in Connecticut. In size, quantity, quality, and healthfulness of the trees there was nothing left to be desired.

THE LOUIS GAUTHIER STRAWBERRY.—The Louis Gauthier Strawberry blossoms have the perfume of the *Chimaphila maculata*, in the early dewey mornings. This plant is worth cultivating among the flower plants in the borders of the garden. It is totally unlike all other strawberry plants that I have ever met with. It is an aristocrat, a prince among strawberries, handsome and refined; its foliage is clean-cut and beautiful; its trusses of blossoms are on manly and vigorous stems. It has perfect stamens and pistils in the same flower, and the bloom is as handsome as a rose. I am anxious to see its great, luscious fruit bending down those vigorous peduncles—fruit so large that I will have to use a knife and fork to dismember them or bite out pieces small enough to chew comfortably. A sweet berry, as this berry is said to be, will be very desirable, even if it is neither purple nor scarlet. Its pink and white berry will be ranked among the high-toned people of the world. Pink and white things stand high. There is no degeneracy here.

Festus, Missouri. F. K. STEELE.

CHICORY.—The Chicory, *Cichorium Intybus*, is now very common as a wayside flower in many parts of the United States. It was introduced from Europe in the days when the cheap coffee-mills were unknown, in order that its dried and powdered roots might be used to mix with ground coffee as sold in the provision stores; and it has escaped from cultivation, wherein, indeed, it is found no more. It is not generally known that a variety, under the name of Witloof, has become very popular as a salad and all-round vegetable on the continent of Europe. Its neighbor, the Endive, *Cichorium Endiva* of botanists, is well known on our tables, more, however, as a garnish than as something to eat. The samples are usually too bitter. To blanch them properly, flat boards or tiles should be placed over the whole plant, when nearly large enough for use. Witloof is a very strong-growing kind of chicory, in which the midrib of the leaf has become very broad and succulent, and curves inwardly so as to make a long, drawn-out head, similar to the class of salad plants known as the Cos Lettuce. The plant is grown in large quantities in Belgium, and is imported freely into the English markets. The London *Gardening Illustrated* wonders why English market-gardeners have not taken to the growing of it for profit. The plants are raised from seed, and then transplanted, being set deep in the ground, from which they shoot up like a head of asparagus, blanched, and ready for use. Messrs. Vilmorin say it is not only used as a salad, but is cooked in various ways.

WITLOOF, OR CABBAGE-HEADED CHICORY.

WINTER ORCHARD WORK.—It must not be thought that with the gathering and disposition of the fruit, the orchard needs no particular attention before next summer. Take advantage of the slackening of other out-door work, and study the needs of the trees.

The difference between fruit from well-cared-for trees and neglected ones is as great, comparatively, as between an unhoed truck-patch and a clean one. Winter work includes attacks on insects, fertilizing, pruning and cultivating.

Perhaps the greatest obstruction to the production of good fruit is the destructive work of insects. Most of the worst of these are in a dormant or pupal state in winter and can easily be destroyed if they be gathered. Their cocoons are hid under the loose bark of trees, on sticks and any refuse lying about. The ground should be raked over, decayed fruit and all refuse gathered into a pile and burned, the ashes spread over the ground. Search carefully for the cocoons on the trees and any permanent thing about the orchard. The loose bark on the trees may be *scraped* off (don't cut into sound bark, as an ignorant gardener was found to have done), and this will disclose many cocoons.

Scale insects are more difficult to reach. If the trees be very badly infested, and it is desired to save them, prune them in very closely, burn the wood pruned away, and treat the trunk and few remaining limbs. Whitewashing the entire tree is the oldest remedy. The lime will gradually flake off and carry scales with it, cleaning the bark thoroughly. Two applications during the winter will be advisable to catch something that may have escaped the first painting. Lime is a general purifier, and will be helpful to the trees in more ways than one.

The most approved method for ridding trees of scale is by spraying some oily solution over them, but the difficulty is in reaching every part of each tree's surface. If the tree be cut back as suggested, the difficulty is lessened.

The finer the spray, the better the surface

will be covered. Thick, greasy substances have been used in spraying as well as linseed and coal oils. Injury has been done trees by their use in summer, but there is little or no risk in winter when they are dormant.

Among various scale insects, the San Jose scale is considered most alarming, and this is due to the enormous rapidity with which it increases, one female alone producing a big army in one season. The Scurfy Bark Louse and Oyster Shell Bark Louse are bad enough to make it desirable to keep down their increase. The same treatment applies to all.

Fertilizing is at times undesirable before late winter. If stable manure be used, it may be hauled to the ground in mid-winter and allowed to decay and soak into the soil. This is well accomplished by the time the roots are in need of the food in early spring. Stable manure is the best fertilizer where it is desired to encourage growth of wood. It is also good as a mulch for the protection of surface roots which are generally plentiful with old trees.

Potash in wood-ashes is considered especially good for fruiting trees. Apply in late winter or in spring. Many orchardists alternate between barnyard manure and wood-ashes, or commercial fertilizers of some kind. This is a good practice.

Pruning should be done in winter, where it is necessary to prune away large limbs. The trees may need branches thinned out to give an abundance of light and air amongst the branches—they cannot have too much. A low spreading habit should be encouraged for exposure of as great a surface to the light as possible. If the trees are spreading close to each other, don't be afraid to cut out alternate ones where necessary. It will give additional value and longer life to the remaining ones.

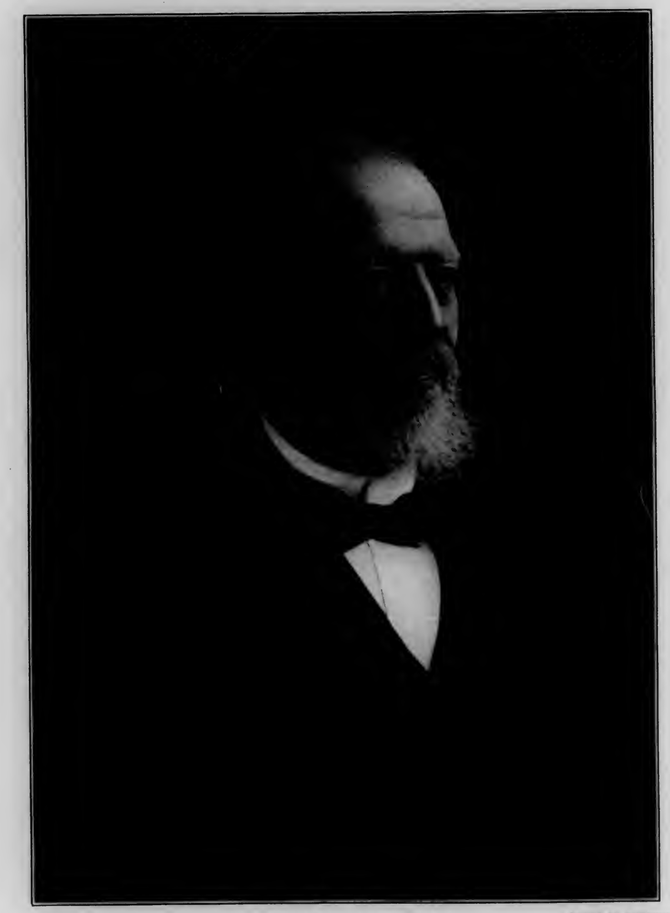
Cultivating can be done to advantage in winter. Surface soil should be stirred and made fine to admit air and moisture readily in the growing season. Summer cultivation must necessarily be rather shallow for fear of disturbing the young feeding roots, which are rather near the surface. This danger is not present in winter, and it is a good time to break up the soil deeply. The surface may first have its coating of manure and then be turned lightly under. It need not be harrowed smooth—the rains and frost will do that to perfection.

When weather will not permit of outside work, get the spraying apparatus in order, and the formulas ready for early work in spring. Get ahead of the Codling Moth. If you propose setting out more trees, plan it out on paper, deciding exactly what you will plant and what space each should have. Large-growing trees, like apples, are often given 36 feet square. Other kinds are given less, down to 18 feet. It is safest to err in giving them too much. The holes may even be dug and manure placed in them to become well incorporated with the soil. Spring planting is usually accompanied by considerable haste, because of other work at that time, and it is advisable to be in readiness.

SAN JOSE SCALE.—"Garden Notes," in the Hartford *Daily Times*, notes the existence of San Jose scale on Hazel plants. It is unreasonable to suppose that this insect will confine itself to nursery trees. The Hazel is a wild as well as a cultivated plant,—and, besides, there are wild as well as cultivated fruit trees. All the laws in the land will not prevent its spread. The only security is for the garden manager to watch for the first appearance and destroy it before it spreads. It is necessary to work as regularly against the spread of insects as against the spread of weeds.

APPLE, NEWTOWN PIPPIN.—Once upon a time, he who had an orchard of Newtown Pippin Apples in the east had the envy of his brethren. It was a first-class apple in every respect, and a very profitable one to grow. For some reason, the story traveled that it was "no good any more." But the Californians find a bonanza in it. There are many hundreds of acres of this variety in the State, and it is all that the successful apple-raiser desires in a successful kind.

BEN DAVIS AND YORK IMPERIAL APPLES.—As a profitable market apple, there is quite a contest between the York Imperial and Ben Davis, as to which shall produce the best returns,—but their merits are so nearly equal that both kinds are being largely planted. The York Imperial affords a better grade of apple for eating, but is not quite so productive as Ben Davis.



THOMAS MEEHAN PHOTO BY GUTEKUNST

BIOGRAPHY AND LITERATURE.

THOMAS MEEHAN.—As we go to press we are called upon to chronicle the death of the Senior Conductor of MEEHANS' MONTHLY, Thomas Meehan. He passed away, after a lingering illness, on November 19th. It is considered a fitting close to his work to reproduce in this issue his best likeness, photographed but a few months before his death. The January issue will contain a brief sketch of his life.

THE PARK OF WEIMAR,—THE ELYSIUM OF GOETHE.—It is by all means a most gratifying encouragement to the editor and correspondent of a journal when occasionally, out of the ranks of their readers, bursts forth the voice of approval and pleasure. This was the case after the appearance of the article treating "The Park of Belvedere and its connections with Goethe's botanical studies," in last April's issue of MEEHANS' MONTHLY, and this has induced your correspondent to introduce the poet and philosopher, Goethe, as landscape gardener,—or, if it pleases you more,—as landscape architect. In order to do so, we are again to journey towards the forest-crowned mountain-ridges of song and mirth-loving Thuringia. Here we find situated, on the somewhat elevated banks of the river Ilm, the city of Weimar. Like many others of the smaller residences of the various German principalities, Weimar would be nothing more than a quiet town, with the imposing castle of the ruler and three churches as the most prominent edifices, around which, over an area of a square mile or two, the more modest dwellings of the townspeople nestle; but, for centuries past, the House of Saxe Weimar Eisenach has made this place the traditional home of art and science. To Germany and far beyond her borders, the "classic Ilm-Athens" is well known. It has been the homestead of eminent poets; it boasts of its famous school of fine arts; within the walls of the old venerable theatre—"the temple of the Muses"—Richard Wagner and Franz Liszt wielded the baton; yet, of all the radiant stars of intellect and the masters of art which Weimar has harbored, the genius of Goethe shines brightest. And however, in keeping pace with the time, her countenance may have changed, she remains in reality to-day still the Weimar of Goethe,—the Mecca of the students of his philosophy, endeared to his many admirers. But, being bound for the park, we leave aside the Goethe and Schiller archives and all the many other places where the German worships his great sons, and hasten amid the virid vegetation to the southeast of the city.

If poets, as a rule, love free nature, then Goethe was, indeed, no exception; but, to his powerful ingenuity, a mere admiration of that which existed did not afford the desired gratification. Gifted with a vivid inclination for the joyous life amid a free and verdant vegetation and a marvelous activity, he naturally became at first interested in gardening, and at last turned out a landscape architect of the highest order. Taking into consideration that, at the time Goethe appeared in Weimar, the present free, natural style was very little known, the gardens and parks of continental Europe being still generally forced into the straight-jacket of the French and Italian forms, his work becomes, to a certain degree, reformatory for Germany.

On the 21st of April, 1776, he took possession of the little garden-house which his noble friend Duke Karl August had provided for him (see illustration, page 14, vol. 11), and, on the 20th of May of the same year, he wrote in his diary, "The work of the lower section has begun," thereby alluding to the remodeling of his own little garden. There he personally was busy planting trees, which doing he accompanied with the reflective wish:

"Wachsed wie aus meinem Herzen,
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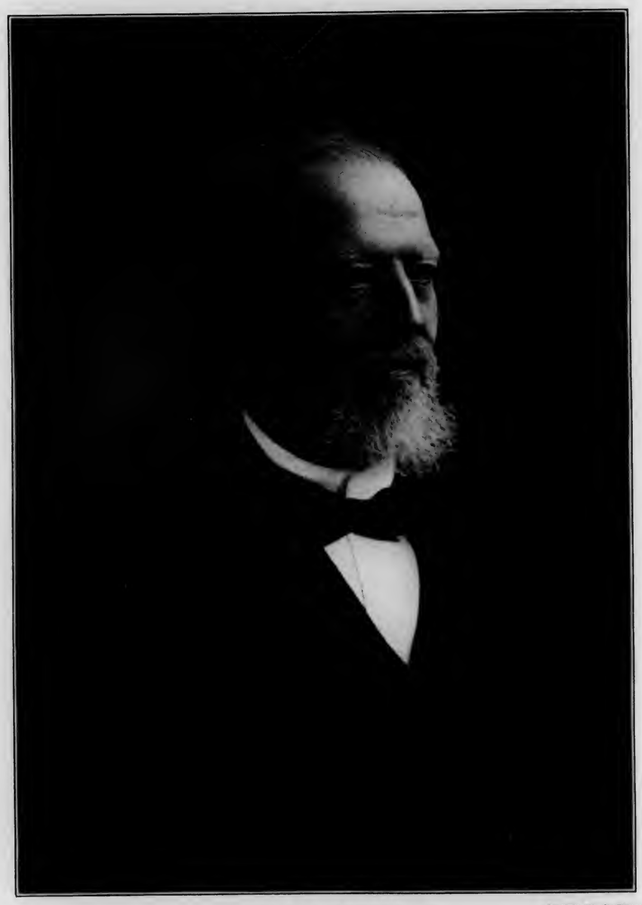

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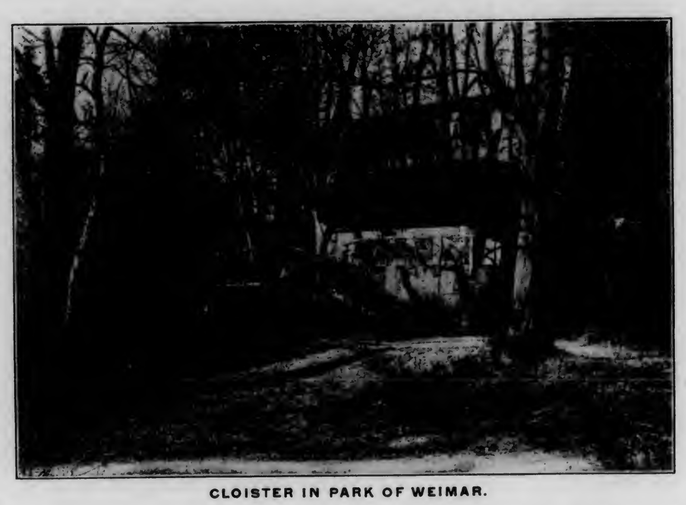
Goethe and Karl August, while on a visit, in December, 1776, resolved to beautify the vicinity of Weimar by "a series of æsthetic pictures." With the usual energy, soon after their return, preparatory steps were taken. The location where their plans were to be realized was a wooded, wild, secluded section along the sloping river banks, opposite Goethe's garden-house. Here "the new poemata," as Wieland styled it, arose. The work was in progress from early spring on, and in its course had brought forth a number of charming scenes conspicuous by some huge rocks laid bare by the shovels of the laborers; a second visit of the Duke and Goethe in Woerlitz, during May, offered new inspirations. His tour through this park, now in full spring attire, the young poet compares to the gentle passing by of a fairy dream; and in the evening, as he wandered through the groves along the charming lakes, he wondered how the gods could permit the happy owner to bring to realization what appeared to him a fair vision.



CLOISTER IN PARK OF WEIMAR.

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As a special ornament for the location formerly the Italian garden, a gothic, chapel-like hall was erected, which, owing to the old statues of ancient knights decorating its outside corners, received the name "Tempel-Herrenhaus." Its spacious salon was frequently used by Duchess Louise for holding tea-parties.

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Goethe and Karl August, while on a visit, in December, 1776, resolved to beautify the vicinity of Weimar by "a series of æsthetic pictures." With the usual energy, soon after their return, preparatory steps were taken. The location where their plans were to be realized was a wooded, wild, secluded section along the sloping river banks, opposite Goethe's garden-house. Here "the new poemata," as Wieland styled it, arose. The work was in progress from early spring on, and in its course had brought forth a number of charming scenes conspicuous by some huge rocks laid bare by the shovels of the laborers; a second visit of the Duke and Goethe in Woerlitz, during May, offered new inspirations. His tour through this park, now in full spring attire, the young poet compares to the gentle passing by of a fairy dream; and in the evening, as he wandered through the groves along the charming lakes, he wondered how the gods could permit the happy owner to bring to realization what appeared to him a fair vision.

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INTENTIONAL SECOND EXPOSURE

stand the infinitely poetic charm, which is intensified by the fitness of the surroundings, when reading the lines:

"O ye kindly nymphs, who dwell 'mongst the rocks and the thickets,
Grant unto each whatsoe'er he may in silence desire;
Comfort impart to the mourner, and give to the doubter instruction,
And let the lover rejoice, finding the bliss that he craves.
For from the gods ye received what they ever denied unto mortals,
Power to comfort and aid all who in you may confide."

[Translated from the original.]

Ten years later, the Duke, for his personal use, decided to build a Roman villa, and he selected, as site for it, the location above the poet's epigram. In his absence, he wrote to Goethe, who acted as architect: "Do just as though you were building for yourself; our tastes have always been alike."

ANCIENT ALTAR IN PARK OF WEIMAR.

The simple structure was plainly but comfortably furnished. From its southerly window one enjoys a beautiful view up to Belvedere castle; while east, the eye may wander over crowns of trees across the green meadows and fields of the Ilm Valley.

Karl August used the Roman house as a *Buen Retiro* up to his death. Here, amid the trees of his park, on the 3d of September, 1825, the celebration of his golden jubilee took place; here, at the earliest morning hour of this festive day, his faithful friend Goethe called, as the first to congratulate, hereby reminding the prince of the long by-gone happy days of Tiefurt. In front of this humble edifice, a few hours afterward, the cheerful strains of the special jubilee cantata rung up into the morning air, while the echo out of the woods around faintly replied, and the throngs of people were silently watching the entrance. And here burst forth aloud all the heartfelt affection of his loyal people, when Grand Duke Karl August's stately figure stood between the white columns of the Roman house to receive the congratulations of his beloved Weimarians. But only three brief years had passed when, on the 21st of June, 1828, we see a sombre procession slowly moving through the park in the direction of the same house. Here, while the death-knells were ringing from the church towers of Weimar, the same people carried the lifeless body of Karl August into his *Buen Retiro*, for temporary rest.

More than a full century has passed since Goethe and Karl August moulded the landscape of the park of Weimar, and it is well to say that the masterhand of the great reformer of the German landscape art, Prince Pueckler, completed and rounded up their work. Nevertheless, the park in its essentials bears to-day still the characteristic stamp of Goethe. And more yet, what once was tenderly entrusted to the soil by the hands of poets and philosophers has now grown up and developed to its full beauty—a beauty which, by its perfection, has become an inexhaustive source of pleasure to the eye of the cultured lover of free nature. When following the drives and walks—the mute guides through this vegetation—we are impressed by the loveliness and the beautiful and harmonious alternation of its scenes and vistas as they pass before us. There is nothing of the manufactured aspects so often met with everywhere, and whatever we find of architecture is well and thoughtfully placed. But if we are fully to become aware of the poetical charm of this verdant creation of Goethe, let us, in accordance with poet Wieland's advice, choose for a stroll a bright spring night, when the lilac fills the atmosphere with its fragrance, and the nightingales woo and love. Bathed in the radiant light of the full moon stands the forsaken Roman house; gentle spring breezes now and then glide caressingly over it and vanish and meet again down in the dim of the woods, playing around the quiet, dreamy little cloister, where, in the silence of night, a few rays of light leap about in a will-o'-the-wisp-like dance. From yonder, across river and meadow, through the tall, slender trunks of trees, peeps the garden-house of Goethe, its moonlit contours in sharp contrast with its high, dark background. We hear the low prattles of the Ilm and listen to the mystic whisperings of the leaves. Old, intimate stories they tell us of a young prince who, surrounded by poets and philosophers, designed, planted and loved with them this beautiful piece of free nature, and made it the charming birthplace of Goethe's park of Weimar.

TEMPEL-HERRENHAUS IN PARK OF WEIMAR.

poems,—the elysium

RICHARD ROTHE.

Sunset, Laverock, Pa.

HISTORY OF THE FLOWERS AND FERNS OF THE UNITED STATES.—It is not until the tree has grown, and its handsome proportions are in evidence before us, that we are curious to know something of the seed which bore it. It is a fact like this that makes history so unreliable. The importance of an event is not apparent until its origin is lost. Noting a picture of David Landreth, recently, suggests the note that the starting of the "Native Flowers and Ferns of the United States," of which the frontispiece and chapter in each

MEEHANS' MONTHLY is a continuation, was due to David Landreth. When Louis Prang made his beautiful exhibit of chromo-lithography, at the American Centennial, 1876, he urged on Mr. Prang the value of such a work, and arranged with this gentleman the meeting between him and Mr. Meehan for the establishment of the work. David Landreth did more for American gardening, in the early part of our history as a nation, than he has been credited with. His nursery and seed business was established in Philadelphia in 1784. Its founder was David Landreth, born 1752, near Berwick-on-Tweed, son of a Northumberland farmer who had, in England, applied himself to the business of tree-growing. He emigrated to Canada in 1781, shortly after removing to Philadelphia. About 1786 he associated his brother Cuthbert in the business of seed and tree culture. The first place of business was on High Street, the exact position now being covered by the buildings 1210 and 1212 Market Street, then a location well out in the country. Contiguous land was rented for nursery and seed-growing purposes, the largest section being a tract at the intersection of Twelfth and Filbert Streets.

The Federal Street nursery of rare trees and shrubs was still in existence when the writer of this paragraph came to Philadelphia, in 1848. Many a first-class gardener, leaving his native country and all ties of home and

friendship to risk his fortunes in the New World, found a temporary foothold, in the good will of David Landreth, in the Federal Street nursery. The writer of this, encouraged by Robert Buist to settle in Philadelphia just as he had been before by David Landreth, took him to the exact spot in that nursery where he first struck the hoe in the ground at weed-killing, and felt that his youthful heart would break when he thought of his utter loneliness in a strange and distant land,—for distant it was, in those days, under a six weeks' sail!

These early grounds have given way under the march of brick and mortar; and gone are those who have had their early aid in advancing American gardening,—but it is a satisfaction to know that this old and honorable firm still lives, and that the early founder, if living, might still look with pride on the continuation of his work by his children.

FOREST FIRES.—"To prevent forest fires," is the title of two consecutive articles in a leading forestry journal. The first one shows that it is impossible to prevent forest fires, so long as large masses of dried underbrush are permitted to exist. Forest fires would be impossible if arrangements were made to keep woods clear of this inflammable matter. The next author tells how to prevent forest fires by insisting that all this amount of dead matter must be permitted to remain in order to be the receiver and retainer of the water that feeds the springs. But he fails to tell what becomes of this "receiver and retainer" when the forest fire has burned it out. This argument is in continual use,—but it seems strange to have the contention that the best way to prevent a forest fire is to encourage everything that favors it.

UNCOMMON NAMES.—I find the name of lysimachy for loose-strife thus far unrecorded in dictionaries.

Is gumbo-limbo, a West Indian and Florida name, a mere corruption of gum-elemi? Gumbo is a name of okra and of sassafras, and is the French *gombaud*. As to its ultimate source, there is much doubt. It seems certain that the name is a popular one and has reference to the gummy nature of the plant.

Are the names potato and *batatas* really of American origin? In a vocabulary of plant names, of a late fifteenth century date (Earle's "English Plant Names," p. 62), the beet is called *betate*.

I have some notes about the cerbas tree, a huge and doubtless fabulous tree of tropical America. Where can I find a good account of it?

What tree of Liberia is called hickory? Several books of reference speak of the hickory as growing there. It is well known that Sierra Leone has a so-called persimmon.

What tree is known as pepper-wood in the forests of northern California?

What is the botanical name of the Pine Moss which the people of Oregon feed to their cattle? C. W. GREENE.

JOHN JACOB BERNHARDI.—Of Bernhardi, the botanist, very little is known. He was born in Erfurt, Germany, in 1774,—but the date of his death is uncertain, though it is believed to have been about 1840. He is most famous for the magnificent herbarium he prepared, and which, under the advice of Dr. Engelmann, was purchased by the late Henry Shaw, of St. Louis,—and is the foundation of the now great herbarium of the St. Louis Botanic Garden, of which Prof. Wm. Trelease is the director.

GENERAL NOTES.

A RARE EXPOSITION OF FORESTRY, FISH AND GAME INTERESTS.—One of the most unique expositions in the history of forestry and allied interests is taking place in Philadelphia, and will continue till December 21st.

An attempt is made to bring the visitor in closer touch with realities not only in the abundant and varied exhibit of live game fish, game animals and birds, hunting appliances and hunters themselves, but in the naturalness of the surroundings. The interiors of some buildings will be arranged like an open forest; lakes and mountains will be reproduced, so one may imagine he is in the open, piney woods themselves.

The entire subject is sure to please the whole people, as it has little to do with technicalities. Naturally, the sportsmanship of man's nature will be most largely appealed to. Amusing features will be introduced by swimming, diving, and games to take place in the "open" lakes.

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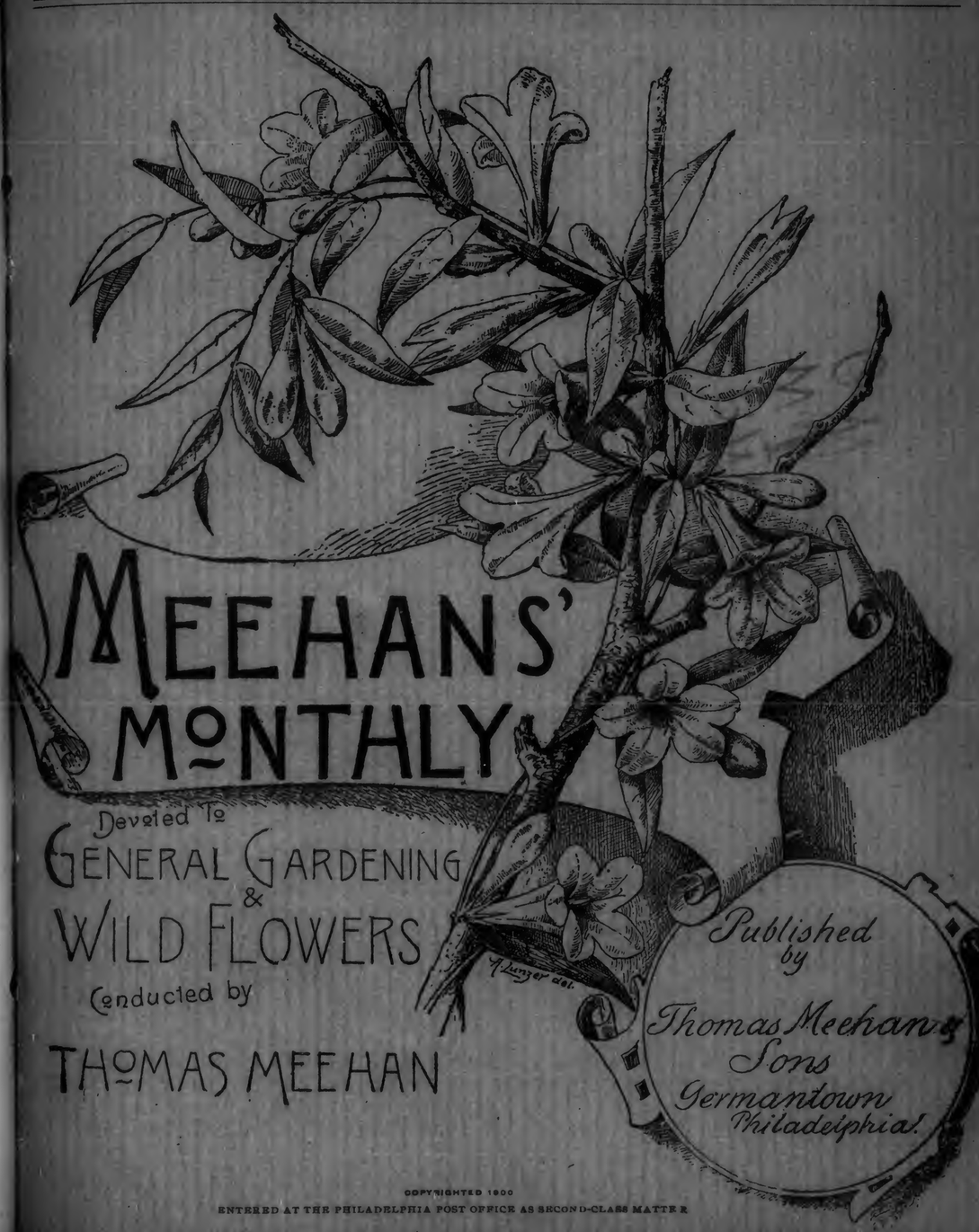

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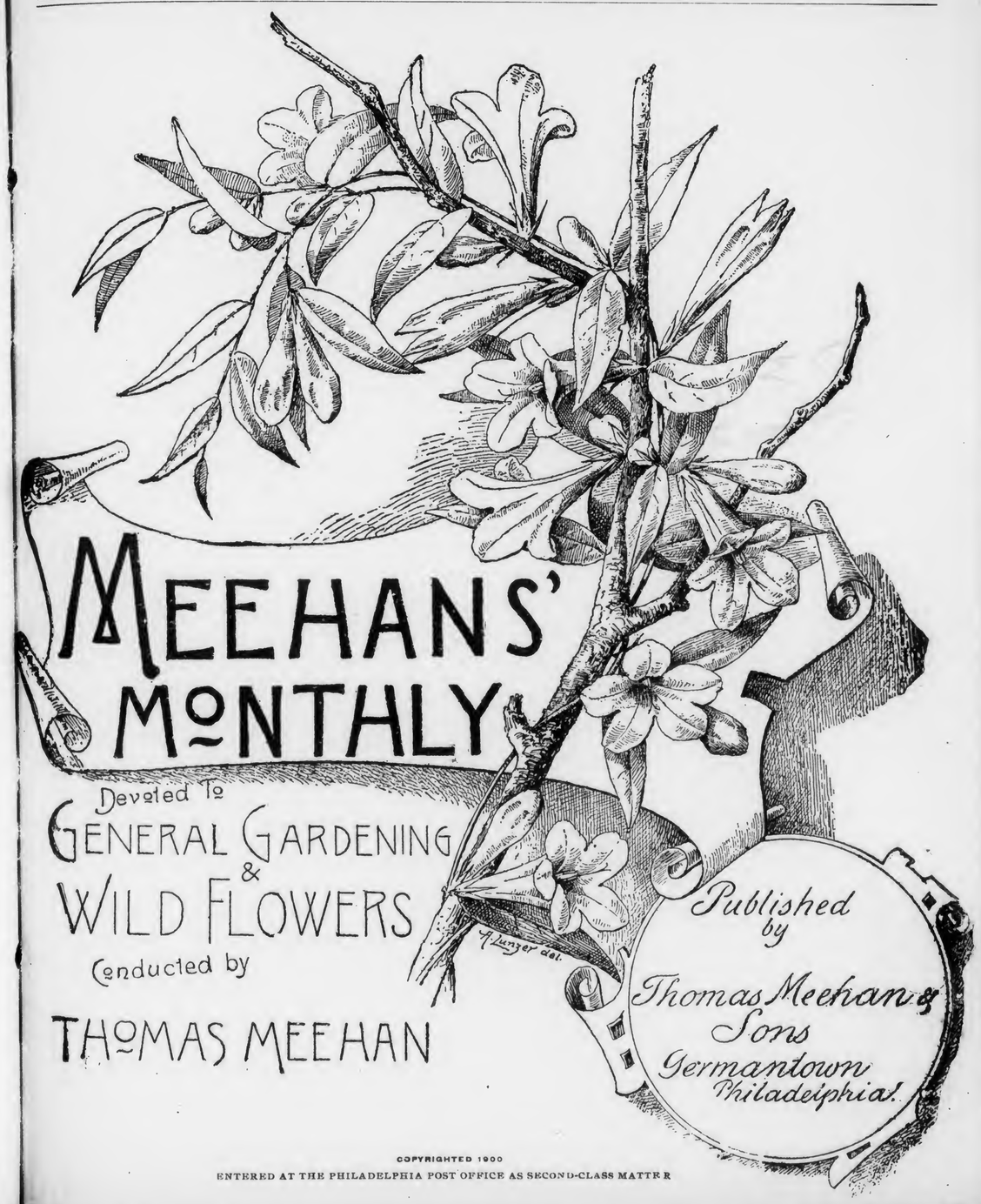

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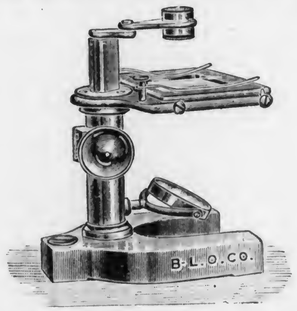

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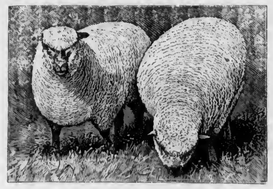

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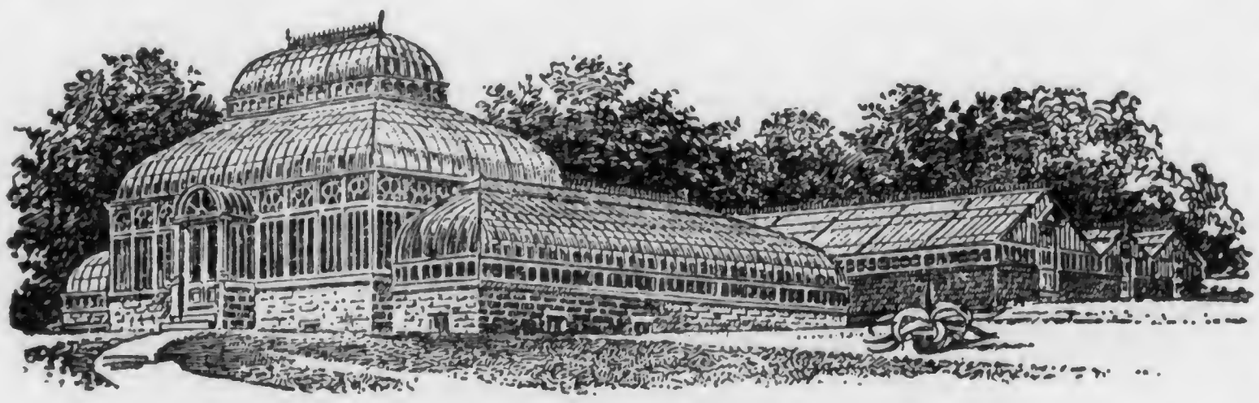

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